ABSTRACT

Title of Thesis: **REMEMBERING PLACE: REVIVING THE RITUAL OF MAKING**

Stephen Pasquerello, Master of Architecture, 2017

Thesis Directed By: Matthew J. Bell, Professor, School of Architecture, Planning & Preservation

This thesis will address the reclamation of an abandoned building to revive its historical significance and restore a sense of place. We aim to preserve and enhance the value of the building in ways that remember the history of what was there, while implementing forward-thinking program.

The project seeks to create a STEAM Academy in an adaptive reuse of an abandoned factory built in 1916, known as the Tractor Building at Clipper Mill. This building, as part of a complex of buildings once owned by the Poole & Hunt Foundry and Machine Works Company, has a strong history of industrial-era manufacturing.

This thesis aims to preserve the history of the Tractor Building and enhance its sense of place by reviving the ritual of making.

The proposed school will place an emphasis on collaborative environments for students that promote applied learning through the act of making and creating. The design proposal calls for multiple intervention types: inserting new program within the existing shell of the building; juxtaposing the existing building with new forms; and linking the old and the new through physical and visual connections.

REMEMBERING PLACE: REVIVING THE RITUAL OF MAKING

by

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Chapter 1: Overview

Organization

This thesis is organized in three major parts: the collection of information, the analysis of history and context, and the implementation of design. First, information will be collected and documented to inform the design process. Second, a set of problems will be identified as a result of the analysis. Third, a strategy will be presented in the form of a design solution.

Concepts

To construct an argument, we must first lay the groundwork on which this thesis will stand. In this section, we will outline concepts from architects and authors to gain insight on issues related to this thesis through various lenses. These concepts, simply put, are in reference to the birth of buildings, the death of buildings, and the revival of buildings.

The first concept is one of structure, connections, and construction. The term, “Open Building" coined by Sidney Magee, author of *The Open System*, offers a streamlined process for building. The driving force behind this theory of openness is to invite the design of alternative components that abide by standard dimensions and connections to allow for accumulative additions and adaptation over the life of a building. There are 4 elements to an open building. First, the building must be created using a basic structural Frame. Second, a standard method of connection must be established. Third, a “family” of components must be developed to infill the

structure. Fourth, those components must be made available to the open market, to allow for alternatives.[1]

We can reinterpret these four elements to apply to our project of revival. First, we draw design inspiration from the language of the existing structure. Second, we identify the standard method of connection within the building to support that existing structure. Third, the component of "infill" becomes the program, which will be inserted in the shell of the existing building to spur the revival of place in relation to this history of making. Fourth, and finally, this idea of alternatives can play a role in the evolution of program over time to increase the overlap and interaction of disparate use-types.

Buildings are a symbol of growth, longevity and immortality. However, buildings always outlive their original use; it collapses, erodes and decays. Buildings are then also a symbol of the transience of all things.[2] The next concept comes from the Douglas Murphy's text, *The Architecture of Failure.* This text poses a question about time and the role of use within a building. There is an idea about creation and inevitable destruction. The main lesson from this text is acknowledging that the physical built form will outlast the use with that form.

The next text, *How Buildings Learn,* speaks about this tension created between continually changing programmatic use and a buildings resistance to adaptation. "The whole idea of architecture is permanence. [This permanence] is an illusion."[3] So the question then becomes, how does design invite adaptation? The

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[1] Sidney Magee, *The Open System*, Eugene, Oregon, 2008, p. 5-8
[2] Douglas Murphy, *The Architecture of Failure,* London, England, 2012, p. 1-3
[3] Brand, *How Buildings Learn,* New York, New York, 1994, p. 2

question is framed as follows: Buildings are layered by different rates of change; adaptation is easiest in cheap buildings that are not loved by the masses; buildings are best refined in long-lasting sustained-purpose buildings; adaptation is anathema to architects; the real estate market severs continuity; with the past in mind, it is possible to rethink the approach to the future.[4]

How does design honestly honor, and acknowledge, this passage of time and why are old buildings so well loved? Brian Eno explains, "Humans have a taste for things that not only show that they have been through a process of evolution, but which also show they are still part of one. They are not dead yet."[5] Humans can relate to these buildings because these buildings have stories that can relate to the complexity of the human condition.

By understanding the former use of the building, we can better design for what it will be used for in a contemporary setting, and the possibilities the building holds for future use. The use of a building is one of the most rapidly-changing "layers" of a building, while the building itself has longevity and its site is eternal. Designing for current use will need to consider this layer of site and celebrate the artifacts of its history.

The "layers" of the building are essential to the formation of our argument. The four layers of a building were first defined as: shell, services, scenery and set. Each layer has a different lifespan, which disrupts the system. Robert V. O'Neill,

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[4] Brand, *How Buildings Learn,* New York, New York, 1994, p. 17
[5] Brand, *How Buildings Learn*, p. 11

author if *A Hierarchical Concept of Ecosystems,* describes the challenges with these competing layers, "The dynamics of the system will be dominated by the slow components, with the rapid components simply following along.".[6] Brand then reinterprets the original four layers into his own six layers to include: site, structure, skin, services, space plan and stuff. "What stays fixed in the drawings will stay fixed in the building over time. The column grid will be the bottom layer.", Duffy adds, "Don't solve a five-minute problem with a fifty-year solution."[7] Coordinating the relationship between this various layers is the challenge of renovation and reviving old buildings to fit current needs and contemporary programs.

During the construction of a building, many of these layers begin to merge, making it difficult to detach them from one another when the components need to be updated, replaced or maintained. "Embedding the systems together may look efficient at first, but over time it is the opposite, and destructive as well…an adaptive building must allow for slippage between differently-paced systems…otherwise the slow systems block the flow of the quick ones, and the quick ones tear up the slow ones with their constant change."[8] If we can design a holistic building with all the appropriate systems, but 'disentangle' these systems so they are easily accessible, upgradable and replaceable we can design a flexible building that invites adaptation.

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[6] Stewart Brand, *How Buildings Learn,* New York, New York, 1994, p. 13
[7] Brand, *How Buildings Learn, p. 17*
[8] Brand, *How Buildings Learn, p. 17*

Goals

This thesis seeks to create a learning center through an adaptive reuse of an existing building, with the potential for multiple intervention types.

These types include: inserting new program within the existing shell of the building; juxtaposing the existing building with new forms; and linking the old and the new through physical and visual connections.

Through these interventions we aim to preserve the history of the building and enhance its sense of place in ways that remember what was there, while implementing forward-thinking program.

Chapter 2: Site

Site Selection

In the process of selecting a site, there were four criteria to satisfy. First, a building or structure currently occupies the site. Second, that built form will allow for an adaptive-reuse design proposal. Third, the site permits the addition of new built forms. And fourth, the site is situated in a location that can engage the local context.

Figure 1, Baltimore Metropolitan Area, Potential Sites (Source: Author)

This thesis will consider three sites in the Baltimore metropolitan area for further investigation. Site A, the Tractor Building, is located at 2031 Clipper Park Road as part of the Poole and Hunt Foundry and Machine Works complex. Site B, the Fells Point Recreation Pier, extends into the Baltimore Harbor at 1715 Thames

Street. And Site C, Foundry Station, finds itself outside the city at 7101 Sollers Point Road in Dundalk, Baltimore County.

These locations have satisfied the criteria previously stated for site selection. These sites all have early 20th Century buildings occupying their respective sites and will allow for an adaptive reuse of their structural footprint. In addition, these sites permit the addition of new built forms, whether they be expansions of existing structures or separate, stand-alone additions, and provide opportunities to better serve the surrounding context. The objective of this section is to evaluate the various locations and identify a single site for further exploration.

Site A_Tractor Building

2031 Clipper Park Road, Baltimore, Maryland

Figure 2, Site A: Tractor Building (Source: Author)

Erecting Shop 2 (ca. 1916), known as the Tractor Building, is part of a complex of six existing fieldstone and brick buildings that were erected between 1856

and 1916, formally serving the Poole and Hunt Company.[9] Each of these six buildings has received accumulative additions during its 80 years of industrial-era manufacturing. The terminology and numbering system used in this document will reflect the classification of the National Register of Historic Places Inventory. The six buildings and their construction dates are as follows:

Figure 3, Poole and Hunt Company Building Complex (Source: Author)

*Bldg. No. 08*_**Office** (ca. 1905)
*Bldg. No. 04*_**Blacksmith Shop** [Artisan Building] (ca. 1856)
*Bldg. No. 05*_**Foundry** (ca. 1870)
*Bldg. No. 03*_**Erecting Shop 1** [Assembly Building] (ca. 1890)
*Bldg. No. 21*_**Erecting Shop 2** [Tractor Building] (ca. 1916)
*Bldg. No. 27*_**Wagon House** [Stables Building] (ca. 1890)

[9] Cathrine F. Black, *National Register of Historic Places Inventory*, Baltimore, Maryland, 1972, p. 4

The Poole and Hunt Foundry and Machine Works complex occupies a 17.4-acre valley, situated between the northern edge of Druid Hill Park and the hills of the Woodberry neighborhood to the north.

The buildings are arranged in two liner strips in the east-west direction and form a central corridor between the northern buildings and the southern buildings. The Office, Foundry, and Blacksmith Shop occupy the northern half of the site, while the Tractor Building, Assembly Building, and Wagon House occupy the southern half of the site. The first structure built on site was the Machine Shop, completed in 1853, however a 1995 fire destroyed the shop and caused considerable damaged to the Assembly Building. A new building now occupies the previous footprint of the destroyed Machine shop, while loft-style apartments inhabit the restored Assembly Building.

Figure 4, Site A: Relationship to Surrounding Context

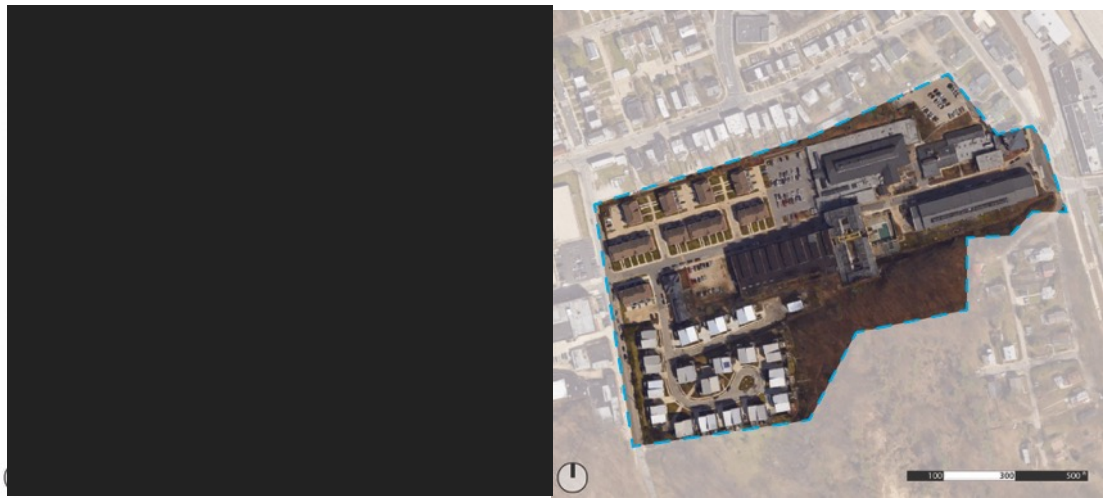

Figure 5, Site Boundary, Left:1916, Right:2016 (Source: NRHP and Author)

Approximately 6 acres of the original 17.4 acres has since been allocated for low density housing to the northwest and south. The land to the north and south of the site boundary is sloped a fair amount, however the site itself was graded at the time of construction to create a level building area.

Figure 6, Site Topography (Source: Author)

Along the eastern edge of the site are railroad tracks that run in the north-south direction. These tracks were previously used for industrial freight, with tracks running through the grounds of the site to haul both raw material and finished product, but have since been converted to a Light Rail line.[10] Further to the east, running parallel to the rail line, is the Jones Falls Expressway.

Figure 7, Site Access (Source: Author)

The partnership between Poole and Hunt succeeded Poole and Ferguson, which was founded in 1843 in downtown Baltimore, and was an international leader in the production of heavy machinery. Poole & Hunt began as specialists in

[10] Cathrine F. Black, *National Register of Historic Places Inventory*, Baltimore, Maryland, 1972, p. 2

manufacturing transmission machinery, however they would also become known for their custom work.[11]

While the production of standardized products allowed for the company's initial success, it was the custom casting of the world's largest sand wheel that powered the Assembly Building, measuring 65 feet in diameter and weighing 500 tons, that drew international attention to the Baltimore manufacturer. This success

Figure 8, Left: Foundry Yard looking West, Right: Sand Wheel, Erecting Shop 1 (Source: National Register of Historic Places)

was documented in foreign and domestic technical and scientific journals and would lead to high-profile commissions for the company, including the 36 iron columns that support the dome of the US Capitol.[12]

As the company grew, so did the buildings. Between the years of 1856 and 1916, there were 21 unique instances of additions, alterations or modifications to the structures. Descriptions of the main buildings, as well as their additions, will be provided below. The order will follow the same sequence as above; beginning from

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[11] Cathrine F. Black, *National Register of Historic Places Inventory*, Baltimore, Maryland, 1972, p. 4

[12] Black, *National Register of Historic Places Inventory,* p. 4

the northern ‘strip’ of buildings from east to west, then the southern buildings from east to west.

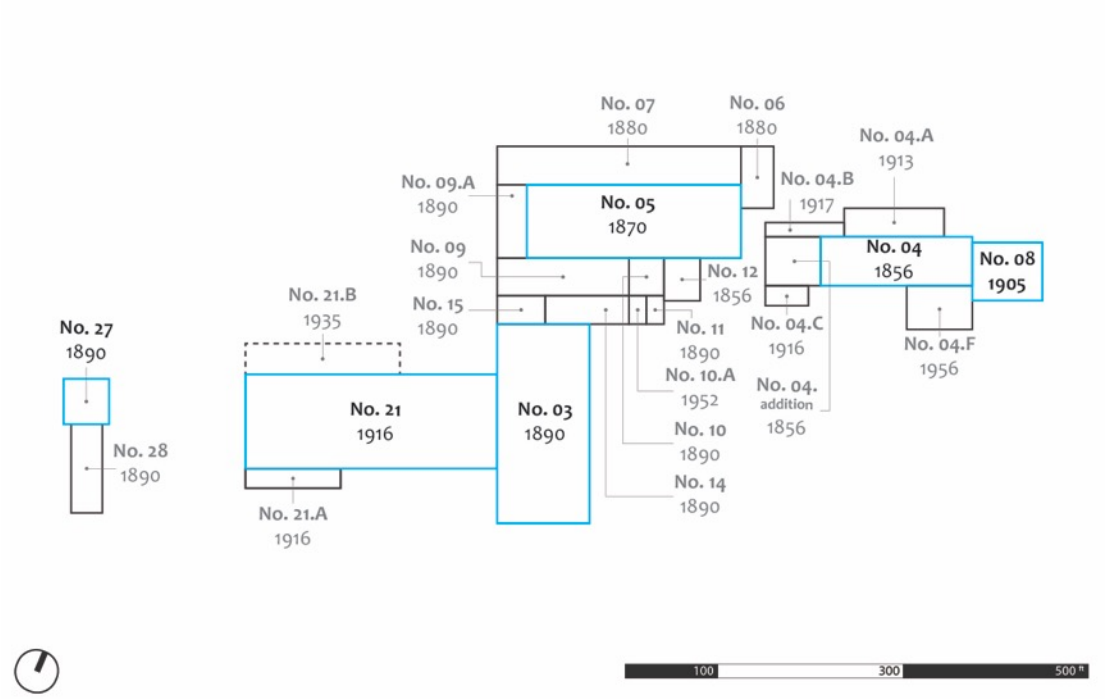

Figure 9, Building Additions Over Time (Source: Author)

*Bldg. No. 08*_**Office** (ca. 1905)

Figure 10, Office, 2003 (Source: Betty Bird + Associates)

The Office is on the northeastern corner of the complex. It’s a three-story building, measures 60 feet on each side and is composed of 9 interior bays with a hipped roof. It’s constructed of primarily of brick, with an exposed brownstone base.[13] The Office was the former ‘gateway’ to the building complex, and while the interior has seen massive renovations, the exterior

[13] Cathrine F. Black, *National Register of Historic Places Inventory*, Baltimore, Maryland, 1972, p. 2

remains unaltered. The building is currently occupied by Urbanite, a local media outlet.

*Bldg. No. 04*_**Blacksmith Shop** [Artisan Building] (ca. 1856)

The Blacksmith Shop, or Artisan Building, is the oldest surviving building in the Poole and Hunt complex. This building has a rectangular footprint with a gable roof directly to the west of the Office. It stands 7 bays long by one story high and measures 180' x 50'. Over the course of 100 years, the Blacksmith Shop underwent five different additions:

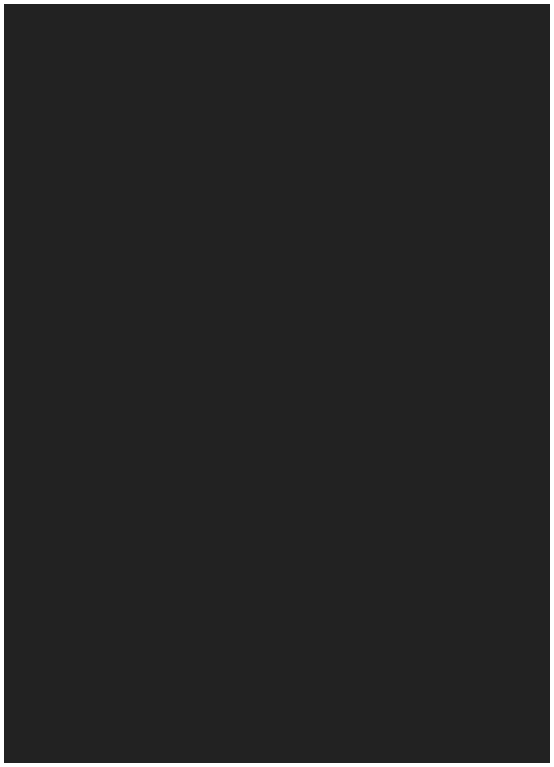

Figure 11, Southeast of Blacksmith Shop, 2003 (Source: Betty Bird + Associates)

No. 04 Addition (ca. 1856) is a single story, square footprint building with a monitor roof. Built with stone construction, this addition extends to the west from the Blacksmith Shop. Future additions, 04.B and 04.C, extend from this addition. No. 04.A (ca. 1913) is a single story, rectangular footprint building with a gable roof with the short ends of the building extending above the pitch line. This is a brick building located on the north facade of the Blacksmith Shop. No. 04.B (ca. 1917) and No. 04.C (ca. 1916) are brick additions with a rectangular footprint and shed roofs that continue the roof line the No. 04 Addition. These additions are mirrors of each other and extend to the north and south, on either side of the No. 04 Addition. The final addition, No. 04.F (ca. 1956), is the only two-story addition to this building and is made of CMU block with a brick facade on the east side. This building was constructed after the "period of significance" for this

complex and is one of the few buildings on the site that is not part of the National Register of Historic Places.[14]

The interior has been converted to suite style office spaces and is currently occupied by two law firms, the American Diabetes Association, a food-service facility, and an ecosystem investment firm. As of fall 2016, the Artisan Building has 15,369 square feet of space available for lease across three suites.

*Bldg. No. 05*_**Foundry** (ca. 1870)

Figure 12, Interior View East of Foundry, 2003 (Source: Betty Bird + Associates)

The Foundry is a fieldstone and wood building with a rectangular footprint measuring 232' x 84'. The building is one story high, however it is a tall single story with its wood-structure monitor roof exposed to the interior below. The interior has an open floor plan with columns dispersed throughout and clerestory windows on the north and east facades. The large central bay allowed for the smelting and casting of iron and steel. This building has seen the most renovation out of the original six buildings in the complex with 9 additions between 1870 and 1890, and a single addition in 1952.[15] While these additions are noteworthy for their abundance and symbol of rapid growth and expansion, they are architecturally common. These expansions were purely utilitarian, typically used for the storage of large mechanical equipment and raw material. All additions to the Foundry were one story in height and built of brick, with the exception of building No. 15 which was constructed out of stone. These additions would eventually surround the Foundry on all sides but the southeast corner.

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[14] Cathrine F. Black, *National Register of Historic Places Inventory*, Baltimore, Maryland, 1972, p. 2-3

[15] Black, *National Register of Historic Places Inventory*, p. 3-4

Today, the 50,000 sqft space is used by a wide range of creative professionals and crafts persons including architects, sculptors, jewelry makers, and chefs. The flexibility of the floor plan is ideal for imaginative and collaborative work like metalworking, glassblowing, cabinet working, pottery and several other small scale artisans.

*Bldg. No. 03*_**Erecting Shop 1** [Assembly Building] (ca. 1890)

The Assembly Building is one of two erecting shops on the site. The building has a rectangular footprint, measuring 215' x 108', and is capped with a monitor roof that allowed for the assembly of large machinery.[16] A sally port, or secure gate way, filled the gap between the Assembly Building and the Foundry to the north. Today, that portal remains open and allows for pedestrian and vehicular traffic to move freely in the east-west direction along Clipper Park Road.

Figure 13, Erecting Shop 1 Interior 1980 (Source: Betty Bird + Associates)

Figure 14, Erecting Shop 1 After Fire (Source: Cho Benn Holback + Associates)

This building is one of two in the complex that were affected by a massive 1995 fire that destroyed the Machine Shop and heavily damaged the Assembly Building. The Assembly Building had only one addition to its original form, and served to physically join the Assembly Building to the adjacent Machine Shop, and remains of this addition are still visible. The brick and fieldstone facade, as well as

[16] Cathrine F. Black, *National Register of Historic Places Inventory*, Baltimore, Maryland, 1972, p. 4-5

the steel trusses that supported the roof survived the fire, however the roof itself was destroyed.

Since, the Assembly Building has been converted to loft-style apartment units and is the focal point of the modern-day complex. The large central bay that was previously used for house and build large machinery is now used for vertical circulation to allow access to the apartments. On the upper floors this zone opens to the sky and yellow crane spans the width of the truss system in the east-west direction. The steel trusses are left exposed as they were after the fire and the remains of the addition now frame an outdoor pool at the base of the building.

Figure 15, Left: Erecting Shop 1 East Facade, 2016 Right: Raised Interior Court (Source: Thornhill Properties)

*Bldg. No. 21*_**Erecting Shop 2** [Tractor Building] (ca. 1916)

The Erecting Shop 2, or Tractor Building, is physically attached to Erecting Shop 1 and is joined in a 'T' shape, with the short end of the Tractor Building meeting the long side of the Assembly Building. The building has a rectangular footprint, measuring 108' x 282', and stands two stories tall will a large central bay.

The building's traditional gable roof is interrupted by 7 rectangular monitors that run in the north-south direction. The three exposed facades (north, east, and south) feature multi-story arched windows, however a portion of the south facade has been covered by addition No. 21.A (ca. 1916); a one story concrete structure with a flat roof. The north facade was also covered at one time by addition No. 21.B (ca. 1935) but has since been removed.[17] The remnants of the addition can still be seen in the north facade where the steel structure intersected the brick. The Tractor Building is currently being used as parking for the residents and patrons of the various local businesses in the complex.

Figure 16, Tractor Building Interior, 2016 (Source: Thornhill Properties)

Figure 17, Erecting Shop 2, Original North Facade Building 21, 2011 (Source: Acroterion)

Figure 18, Erecting Shop 2, North Facade Building 21.B, 2003 (Source: Betty Bird + Associates)

[17] Cathrine F. Black, *National Register of Historic Places Inventory*, Baltimore, Maryland, 1972, p. 5

*Bldg. No. 27*_**Wagon House** [Stables Building] (ca. 1890)

Figure 19, Wagon House, East Facade, 2003 (Source: Betty Bird + Associates)

The Wagon House is a two-story building with a square footprint and a cross-gable hipped slate roof. The Wagon House is the only building in the complex that is built using fieldstone construction for the entire structure. The facade of the building is visible on three sides, the east, north and south, and an addition is extended from the south elevation of the original. This addition, No. 28 (ca. 1890), is a one story stone building that is rectangular in shape and was previously used, as the name implies, for the storage of horses and wagons.[18] Today, the 7,500 square foot building is occupied by an ecological restoration firm, Biohabitats.

[18] Cathrine F. Black, *National Register of Historic Places Inventory*, Baltimore, Maryland, 1972, p. 5

Figure 20, Area of Site for Potential New Development, Highlighted in Blue. Boundary and Center, Indicated by Dashed Line (Source: Author)

Site A provides opportunities for a design proposal at various scales. The northwest and southwest corners of the site currently have low density housing and could allow the scope of this project to grow and incorporate neighborhood building and strengthening development in the area. The site's proximity to the Woodberry Light Rail reinforces this idea, however the JFX isolates the area and poses some problems related to connectivity and continuity.

Additionally, the sharply sloped south end of the site is currently occupied by a townhouse development. There may be ways to extend the footprint of the existing building to provide program that connects to Druid Hill Park and add some sectional interest to the project. Growth could also occur towards the west to continue the original corridor that was created between the northern and southern strips of

building. A 100’ x 100’ parking lot separates the Tractor Building from the Stables Building and could allow for continuity of the street edge along Clipper Park Road.

Site A also contributes ideologically to the narrative of this thesis. During the life of the Poole and Hunt complex, all the buildings on the site have undergone extensive expansion and manipulation as needed. Over time, building users demanded more out of their buildings and modified and adapted the physical form to serve the current context. The design proposal that follows will continue this theme by preserving the physical form but adapting its programmatic use, and possibly present a solution that will invite future change.

Site B_Fells Point Recreation Pier

715 Thames Street, Baltimore, Maryland

Figure 21, Site B: Fells Point Recreation Pier (Source: Author)

Figure 22, Left: North Elevation of Facade Building, Right: View of Pier to the South (Source CharmCity1)

The Recreation Pier is located off the west channel of the Patapsco River on the Baltimore Harbor. It is a singular pier positioned at the center of the Fells Point waterfront and is composed primarily of two elements. The first element is the Facade Building. This building is three story brick structure characterized by its classical granite and limestone ornamentation and its grand entrance arch that permits access from Thames Street to the second element; the pier beyond.

Behind the facade building is a two story, warehouse-type, steel structure with an expansive flat roof. It was originally coined the "Broadway Pier" by Mayor James Preston at the opening in 1914 to a crowd of twenty-thousand. They had gathered to celebrate the completion of this $1 Million project that offered both commercial and recreational purposes.[19] While its current name would imply an emphasis on amusement, the recreation aspect is secondary to the commercial. The Facade Building housed all commercial program, which included a spacious entry, office space, and a large assembly hall (now converted), while the recreation element is

[19] Tartar Rosenthal/Apollo (Firm), *Fells Point Recreation Pier Reuse,* Baltimore, Maryland, 1980, p. 9

characterized by its large, interior central bay with a large flat roof used for various activities.

The Facade Building had several tenants, including the Chesapeake Maritime Exchange, the Maryland Port Authority, and the Department of Recreation and Parks. The Chesapeake Maritime Exchange is a radio network that occupies part of the first floor and mezzanine of the Facade Building and broadcasts to the ships arriving at the Port of Baltimore. The Maryland Port Authority occupied the space opposite the Chesapeake Maritime Exchange, across the main entrance arch, on the ground floor. While the entrance portal is an attractive feature from the street, the "exterior ground floor behind the arch is more cavernous than uninviting, and is used for driveway

Figure 23, Recreation Pier, Ground Floor Plan (Source: Tartar Rosenthal/Apollo)

access to the loft building beyond."[20] The entire upper floor, and the outdoor roof deck, was used by the Department of Recreation and Parks. A basketball court

Figure 24,Recreation Pier, Upper Level Plan (Source: Tartar Rosenthal/Apollo)

occupied the space that used to be a grand ballroom, while offices and activity rooms are were scattered around the perimeter.

Over the years, the Recreation Pier has become a place of public engagement only in name. The roof overlooking the Baltimore Harbor, where people used to come to "dance and stroll on the deck on warm summer evenings…has [since] lost some of its charm."[21]. The roof had become covered in black tar and the spacious

[20] Tartar Rosenthal/Apollo (Firm), *Fells Point Recreation Pier Reuse,* Baltimore, Maryland, 1980, p. 12
[21] Tartar Rosenthal/Apollo (Firm), *Fells Point Recreation Pier Reuse,* p. 14

interior below became a tow yard, used for parking and storage as well as some make-shift mechanical shops and offices.

Only one tenant, the towing company, had a formal lease on the space, while various others, including crane operators, ship chandlers, and tugboat companies utilize the space for storage of large items and 24-hour access to the pier. Tugboats

Figure 25, View on Pier Towards the South (Source: Jaclyn Borowski)

dock on the pier for loading, while trucks use the large, central arch of the Facade Building for deliveries and repairs.

Currently Sagamore Development Co., owned by Kevin Plank, the founder of Baltimore-based Under Amour, is developing the site into a 128-room hotel deemed *Sagamore Pandry Baltimore*. The hotel, which will cost $60 million, will feature several restaurants, a whisky bar, a rooftop deck and pool, as well as over 10,000 square feet of meeting and event space. Notably, the grand ballroom will be reclaimed from its use as a basketball court and restored to its original form.

The design proposal for the Recreation Pier would reimagine this development, and for this reason, Site B poses some challenges. The positioning of

the side on the waterfront, isolated on either side, also poses questions about how this building can be integrated back into the Fells Point area as well as issues of public access. One thought is to utilize the strong axis that begins from the Facade Building arch and continues through the ground floor and terminates at the water's edge at the end of the pier.

Site C_Foundry Station

7101 Sollers Point Road, Dundalk, Maryland

Figure 26, Site C: Foundry Station (Source: Author)

Twelve years after the 18th Amendment had been repealed, two alcohol distilleries were built in close proximity to one another in Dundalk, Maryland. One is characterized by its four cubic volumes that line Willow Spring Road, and the other is recognized for its tall smoke stack and water tower on Sollers Point Road. This distillery, known as Foundry Station is a complex of 7 abandoned buildings that

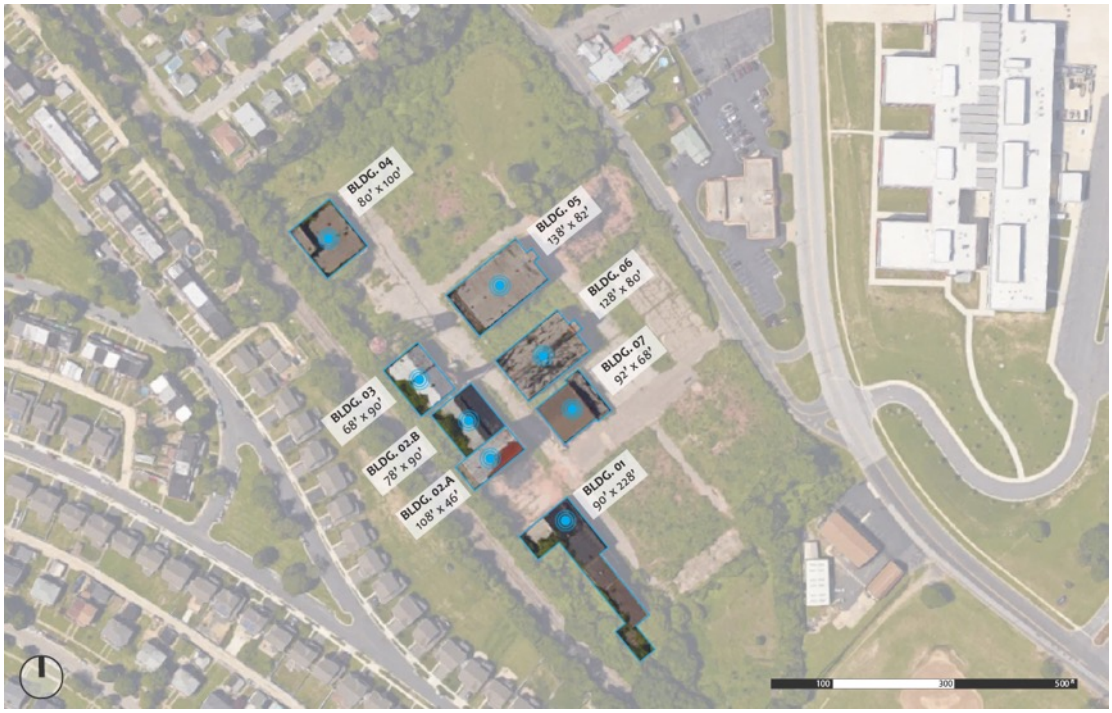

Figure 27, Foundry Station 7-Building Complex, Naming Conventions and Dimensions (Source: Author)

formally produced alcohol for Baltimore Pure Rye in the early 20th century. The structures were erected in 1933 and functioned as a distillery until 1992, however the property changed hands in 1957 when Baltimore Pure Rye sold the facility to Joseph E. Seagram & Sons, Inc. In 1994, Seagram sold the lot to Brewery Station Inc., a company that then "leased portions of the property to various tenants including contractors, a welder, print shop, a lawn care company and a furnisher refinisher."[22]. This operation lasted until 2008 when the property was sold to its current owner, VO, LLC., The property remains vacant and in poor condition today.

The site lays to the east of Baltimore City in Baltimore County, situated between two Baltimore harbor inlets; Colgate Creek to the west and Lynch Cove to the east.

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[22] Maryland Department of the Environment, *Facts About: Former Seagram Property*, Baltimore, Maryland, 2012, p. 1

The larger surrounding context is divided into three main sections; low density residential housing to the northwest, institutional education buildings to the northeast, and a historical district to the south.

Figure 28, Major Elements of Surrounding Context (Source: Author)

The immediate context is bordered by low-density, single family detached housing to the west and south. The north is lined by a two-lane road and the east is softly defined by trees with a small church occupying a small patch of land between the site and an open field park.

The site itself lays relatively flat with a minor grade change sloping 10 feet from north to south. Just across the street, at the high school and community college, the elevation jumps 40 feet where the institutional buildings are situated on a high plateau overlooking the site. To the south, across the rail line, is a series of slowly terraced, semicircular-shaped parcels that conform to the radial street gird. The lowest point in the immediate area is the site of the other alcohol distillery on Willow Spring Road.

The buildings on the site, numbered 1 through 7, are arranged along two main axes. The numbering system begins at number 1 in the southern corner of the site and moves clockwise throughout the complex. Descriptions and photos of all buildings to follow.

Building 1 is located in the southern corner of the site, thin in depth, measuring 90', but stretching 228' in length along its north elevation. The façade of the building is not continuous and gradually steps back its footprint, with its most prominent corner to the east in elevation and its most discrete to the west, receding to the south. The depth of this building lends itself to the dimensions of an office building, with lines of divisions running from north to south that creates a segmented program from east to west. The area of this building is in the range of 25-35,000 sqft and would be best suited for an intervention within the existing shell and an addition that extends to the north.

Figure 29,Building 1 (Source: Author)

Building 2A sits to the west of Building 1, with a space of about 120' between the two. Previously, this space was occupied by a building that shared a wall with Building 2A, however it was destroyed by a fire in 2003, leaving on a pile of charred wood, broken bricks, and a steel structure that remains attached to building 2A.[23] the building itself is narrow and tall with a simple pitch-roof and several punched-

[23] Maryland Department of the Environment, *Facts About: Former Seagram Property*, Baltimore, Maryland, 2012, p. 1

opening windows scattered throughout the north and west elevations. The building measures 48’ on its short, north elevation and runs 108’ back in depth. This slender, but heighted space might lend itself to formal entry to the attached building, 2B to the east.

Figure 30, Building 2A (Source: Author)

Figure 31, Building 2B, (Source: J David Photography)

Building 2B is connected to the east side of Building 2A, measuring 78’ on its connected side and 90’ in the direction that faces towards the center of the site. The interior is single-heighted with a pitched roof running parallel to its long dimension, with a monitor skylight at the center-line. There tall, slender windows on the north and west facades, with solid brick walls on the south and east walls. Because of the proximity of Buildings 2A, 2B, and 3 they would most likely contain a series of

related program. Possible program includes a library, maker-space and museum related to the history of the site.

Building 3 is similar in size and orientation to Building 2B with its long dimension measuring 90' and facing the interior of the site. However, unlike Building 2B, Building 3 is smaller in depth at 68' and steps back from the main corridor. The interior space is singular, with an exposed, pitched-roof ceiling. A mezzanine level exists along the south side of the building, with the majority of the ground-level space oriented towards the north. The north façade is organized by 8 punched-opening windows, while the short elevations share a similar style to Building 2B with tall, slender windows that span the height of the façade.

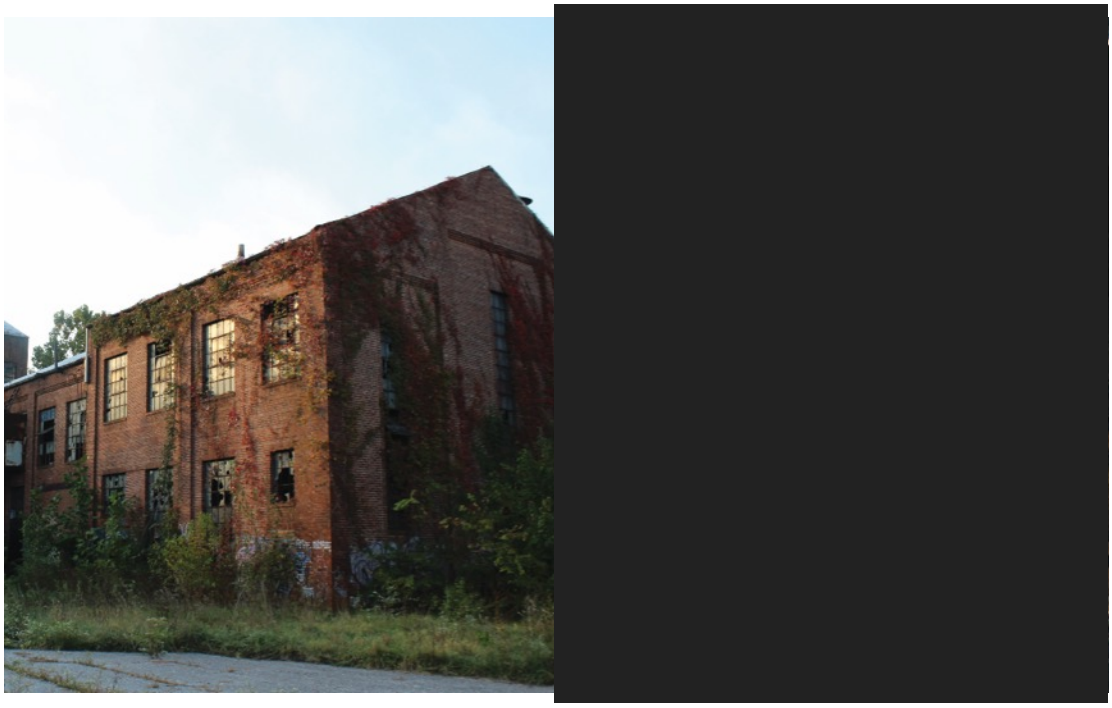

Figure 32, Building 3 (Source: Author & J David Photography)

Building 4 sits in the northern and most isolated of the buildings in the complex, located in the northwest corner of the site. The building measures 80' by 100' and is a single story tall with clearstory, strip windows. Currently, the building

is surrounded with overgrown vegetation, on the verge of becoming completely engulfed. The location of the building on the site and its adjacency to the largest area of open land lends itself to program related to facilities management. Alternatively, if needed, this building could serve a support role if a recreation-based program was introduced to the adjacent land (i.e., locker-room for an outdoor pool).

Figure 33, Building 4 (Source: Author)

Building 5 is the first of two buildings of the same size and type. Building 5 and 6 were previously used to store large barrels of alcohol during the complex's life as a whiskey distillery. Building 5 has a rectangular footprint, measuring 138" by 82"

Figure 34, Building 5 (Source: Author)

with 5 rows of punched-opening windows on both long facades, while a single strip of windows of the same run from the height of the short facades along its center. The interior is a single space infilled with a wooden structure.

Building 6 is adjacent to Building 5 and is similar in size and interior space. Building 6 is slightly smaller than Building 5, measuring 118’ 80’, but shares the same wooden framework interior. Both buildings are larger than what is typical for residential, however, if the design were to keep some of this wooden structure in tact in a multistory, central atrium space, dimensions would be appropriate for units on the perimeter.

Figure 35, Building 6 (Source: Author)

Building 7 is a single-story structure with a pitched roof, masked by a stepped, rectilinear parapet. The building measures 92’ by 68’ with an interior space that is full-heighted, but segmented by walls that run uninterrupted from floor to ceiling. The building’s position is closest to the entry from the street-side of the site and would serve as an appropriate ‘gateway’ to the complex.

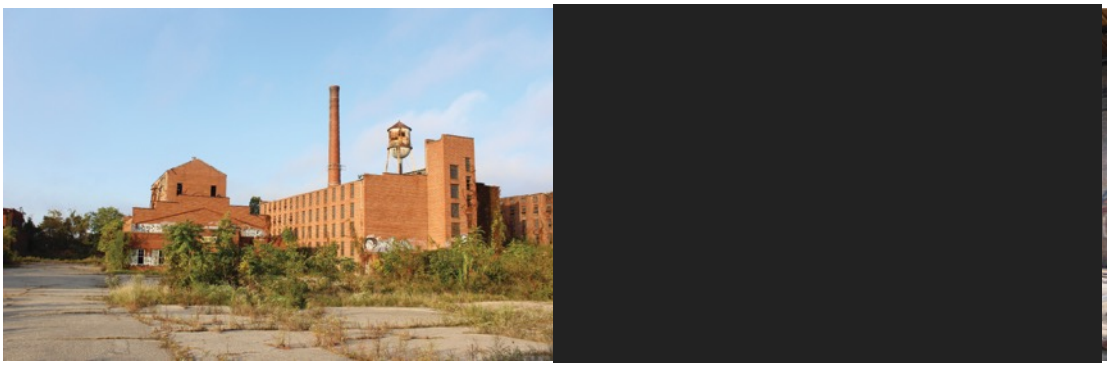

Figure 36, Building 7 (Source: Author & J David Photography)

Figure 37, Axial Organization and Potential Areas of Development, Highlighted in Blue (Source: Author)

The 7 buildings collectively form an interior corridor that creates the major axis of a cross-axis that organizes the site. The secondary axis is formed perpendicular to the first, running from the gated entry at the street side to the tree-lined boundary between the site and the railway on the south. The space that is not occupied by any of these 7 buildings, highlighted in blue in figure 37, offers the opportunity of new construction and development along the Sollers Point Road.

The final and most iconic elements of the Foundry Station complex, are the smokestack and water tower situated along the southern edge of the site. These elements can be seen towering over the rest of the buildings on the site and have remained a dominant visual feature throughout the life of the complex. Both the smoke stack and the water tower must stay intact and play a role in the design proposal.

Figure 38, Smokestack and Water Tower (Source: Author)

Challenges & Opportunities

"Site planning is more than a practical art, however complex its technical apparatus. Its aim is moral and esthetic: to make places which enhance everyday life — which liberate their inhabitants and give them a sense of the world they live in."[24]

- Kevin Lynch

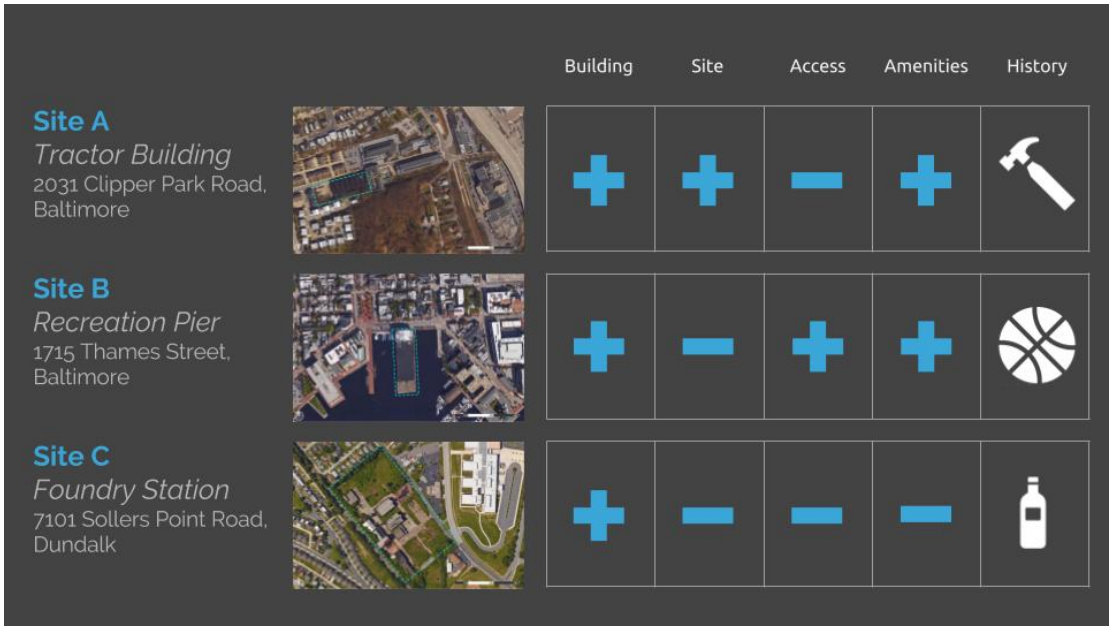

Figure 39, Site Selection Matrix (Source: Author)

In this section, we will examine both the challenges and opportunities that come with each site. This analysis will allow us to select the site that aligns with the

[24] Kevin Lynch and Gary Hack, *Site Planning*, Cambridge, Massachusetts, 1984.

values and goals of this thesis. The site selection matrix shown in figure 39, is a simplification of criteria used to weigh the advantages and disadvantages of each location. The buildings were all selected based on their potential for an adaptive reuse design proposal, therefore they all have advantages unique to the buildings character and style.

Next, the characteristics of the site itself, access to the site, and amenities surrounding the site were taken into consideration. Site 'C' is located in a suburban context and scores low marks for this remote location, restricted access, and limited amenities. The site is too diffuse, and does not have the density to properly serve the program this thesis seeks to propose. Additionally, the lack of public transit to the site limits our audience and impact on the larger community. The final criteria, history of site, is the distilling of alcohol. This theme has its limits in the ways we can revive history of place while also making it welcoming and inclusive to all.

Site 'B', located in Fells Point along Baltimore's Inner Harbor, receives high marks for its ease of access and its local amenities. However, the nature of the site – located on a pier – restricts the site boundary, where the site boundary and the building boundary become synonymous. And while the building's original use included themes of recreation and activity, its contemporary use – until its recent renovation - has been demoted to that of junk-yard. Currently, this site is nearing completion as a hotel, financed by the Baltimore-based Under Amour; an element of this site that is intellectually restricting in this academic exercise.

Lastly, Site 'A' receives the same amount of high and low marks as Site 'B', however the advantages that we gain in the site's character greatly outweigh the

issues of access. The site itself is occupied by the 6 buildings that once served the Poole & Hunt Foundry and Machine Works company, where the building in question, the Tractor Building, provides us with the exciting opportunity to design the last remaining historical structure that has not been renovated for contemporary use. The surrounding buildings have been updated to serve modern needs and offers excellent amenities in the form of housing, restaurants, office space, and more. Additionally, the issues of access that is created in the east-west direction is ameliorated by the light rail that runs every 10 minutes and is within a short walking distance to the site.

Finally, the strong history of manufacturing within the building and on the site within the industrial city of Baltimore offers a greater opportunity to revive its legacy than the other sites. Therefore, Site 'A' will be selected for further exploration in this thesis.

In the next section we will explore formal intervention precedents as they relate to elements of adaptation, expansion, and tension to better inform our design approach.

Chapter 3: Precedent

Setting the Stage

"An old building is not an obstacle but rather a foundation for continued action."[25] The precedents examined in this chapter will focus first on the strategies of reconstruction, restoration and preservation, then, on how these strategies may be applied to this thesis. These precedents will be defined by typology, which are characterized by how an architectural intervention relates to the existing context. By examining the methods in which obsolete building are made whole again, we can better understand the various alternatives and apply these techniques as appropriate.

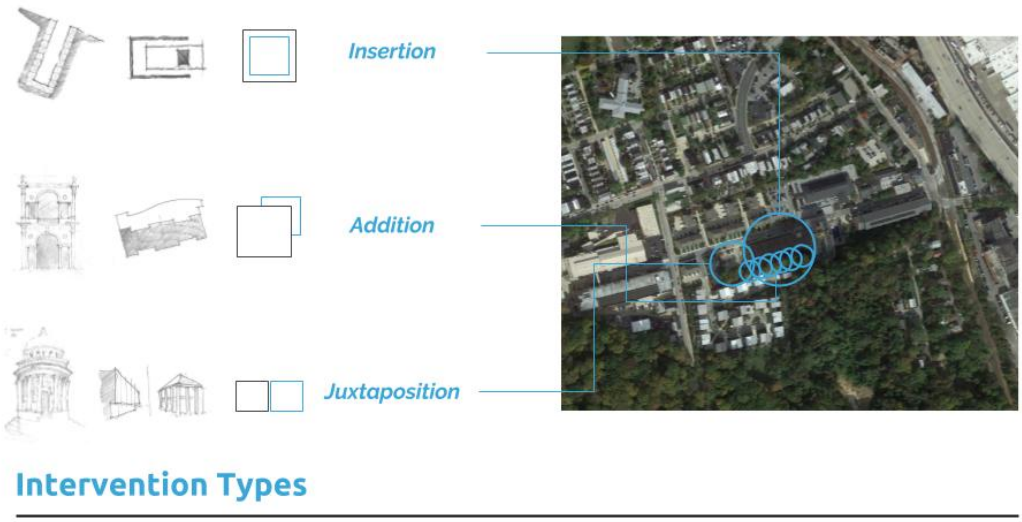

Figure 40, Locating Potential for Interventions (Source: Author)

As a result of our analysis, we can identify three areas of the site that will allow for development; the Tractor Building itself (Bldg. No. 21), the addition and surrounding area to the south (Bldg. No. 21.A), and the 100' x 100' open lot directly

[25] Francoise Astorg Bollack, *Old Buildings New Forms*, New York, New York, 2013, p. 8

to the building's west. Therefore, the projects examined in this section will demonstrate strategies that address themes of "insertions," "additions," and "juxtapositions."

The main structure, the Tractor Building (Bldg. No. 21) is best suited for an "inserting." This type of intervention is characterized by its "parasitic" quality, where the new construction is developed within the shell of the existing building. The bulk of the space on the site is defined by the building shell, therefor the majority of the program will be of this type.

The 1916 building to the south, Bldg. No. 21.A, is a short and slender addition to the main building. Its position on the building lends itself to the "addition" strategy of intervention to bring function to the rear of the building, as well as engage with the surrounding natural context. The program in this zone will relate to a more intimate scale and address the character of Druid Hill Park to the south.

The 100' x 100' open lot to the west of the Tractor Building is an opportunity to engage the streetscape and reveal contemporary elements of the design. In this area, the strategy of "juxtaposing" will be implemented to contrast the old and new while bringing program to the street edge.

These precedents will provide insights into the art of intervention and, will collectively, form the basis for design. The intent of this investigation is to yield functionally useful and aesthetically beautiful qualities that will inform our design in concept and principal. The connection between new and old is not only present in the physical interaction of material, but also in the theory of renovation and reuse itself. Therefore, this precedent analysis will document both contemporary and historical

examples to explore current trends while contextualizing the concepts' deep roots in architectural practice.

Intervention Types

In this section, we will clarify the three types of interventions and expand on the strategies that make these techniques successful. These strategies address how we can revive the value of neglected and abandoned buildings by preserving character and elevating function. The love we have for old buildings stems from their ability to offer a physical embodiment of time and memory. While the memories held may not be of our own, they belong to the human collective. These buildings are a symbol of the endurance and inevitably of time, but also give recognition to the present moment, our lessons learned from the past, and our journey towards what is next.

Insertions

In this type of intervention, the new building is inserted, and occupies, the interior of the old building. Like a hand in a glove, the function of the exterior is dependent on the insertion itself. Likewise, the hand's usefulness is elevated by the function of the exterior. In this relationship, both the new and the old, the hand and the glove, are dependent on the other and are both made stronger by their bond.

The new addition, or insertion, typically has a character that is distinct from that of the existing building. The existing building is often a vernacular structure that has a material palette, style, and history that is tied to its place. This is an important aspect of this type of intervention, since the objective is not to replicate, or to

compete with, what is already there. Rather, the new building should complement the old in ways that enhance both the experience and the function of the collective whole.

This strategy, which aims to give new life to a building, while preserving the character and charm that makes old buildings so lovable, has deep roots in

Figure 41, The Uffizi, Florence, Italy (Source: Apple Maps)

architectural practice. In 1559, when the Medici had outgrown their space in the Palazzo Vecchio they sought the expertise of Giorgio Vasari; the designer of the Uffizi in Florence.[26] The solution was not to build a new building with new function, but to outfit the existing city fabric to meet growing space requirements. With the insertion of this U-shaped intervention into the city's fabric, Vasari had added value and function to the space in ways that are still enjoyed today.

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[26] Francoise Astorg Bollack, *Old Buildings New Forms*, New York, New York, 2013, p. 23

In addition to providing the Medici with the office space they required, the Uffizi formed a new public space; a thin, rectangular corridor that extends from the Piazza della Signoria on the north to the bank of the Arno on the south. In contrast to the adjacent Palazzo Vecchio that forms an edge of the piazza to the north, the Ufizzi is intended to remain integrated into its surroundings; its only exposed facades turned inward and its internal boundary without clear definition. The exterior is formal, clear and unified, while the interior boundary is varied, allowing the form to be absorbed and incased by the city block. "The building is a 'liner' fitted in the old coat that is the city around it, they are interdependent and thoroughly meshed."[27] Once again, the value of each element based on the relationship of the parts to the whole, in that one cannot exist without the other.

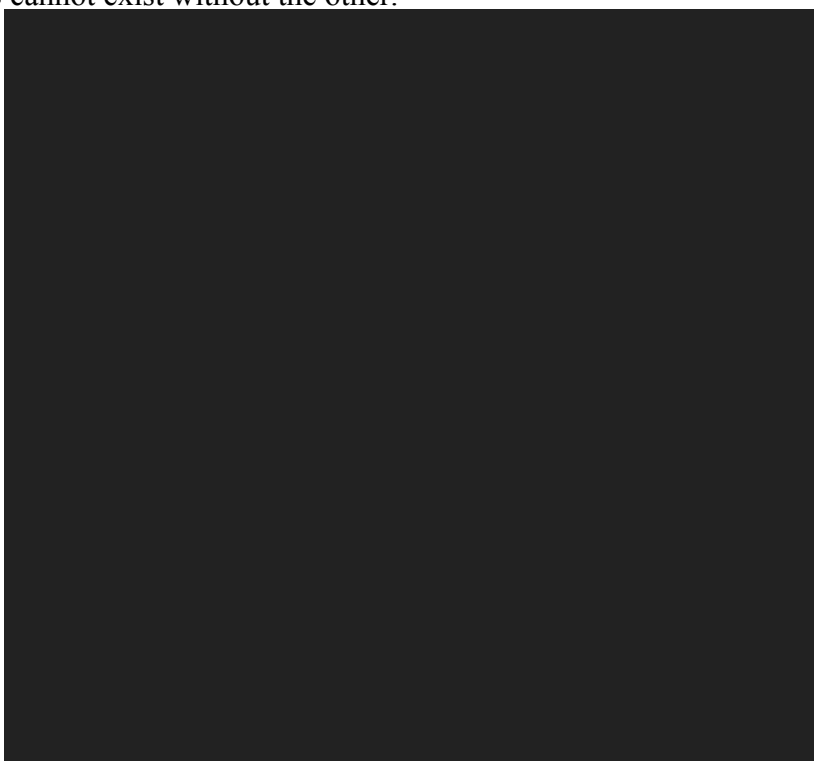

Figure 42, Palazzo Vecchio, Galleria degli Uffizi, Piano Nobile
(Source: Michael Dennis & Associates)

[27] Francoise Astorg Bollack, *Old Buildings New Forms*, New York, New York, 2013, p. 23

The Uffizi is a historical example of "insertion" on the scale of the city that carves out a rectangular form within several blocks to create public space, provide needed program, and allow access from the piazza to the waterfront. While the style and scope of the Uffizi differ from that of this thesis, we can approach the design process using similar strategies to create useful, valuable, and beautiful places. We can find balance in our design by drawing parallels between methods used in a historical context and contemporary architectural technologies and techniques.

A more contemporary example of an intervention that inserts new construction into the shell of an existing structure can be found closer to home, in Baltimore County, Maryland. The Doma Gallery, designed by W Architecture and Landscape Architecture in 2004, is a residence and art gallery built on the interior of a dilapidated barn.[28] The concept of this project, a pristine glass box slipped in

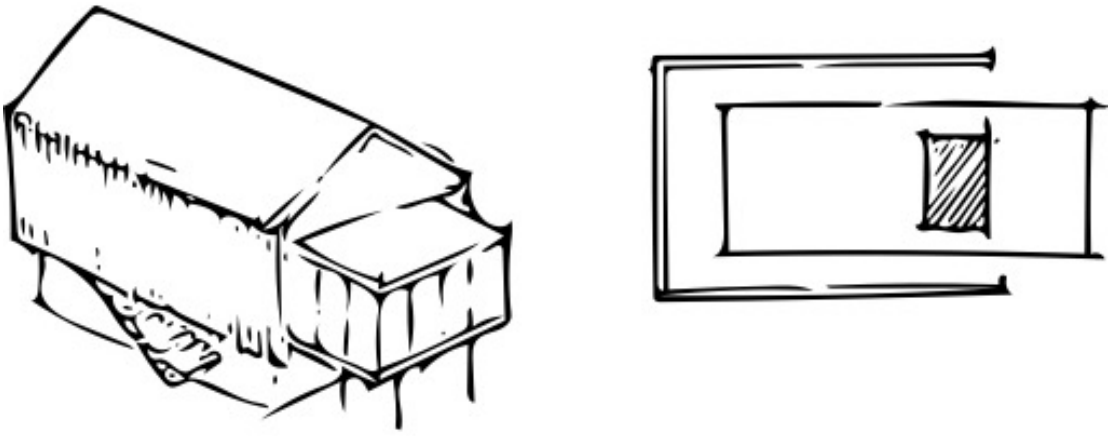

Figure 43, Doma Gallery Concept Diagrams (Source: Author)

between the wooden barn structure, is simple and clearly read. However, the roads that led to this design resolution were long and winding. Exposure to natural

[28] Francoise Astorg Bollack, *Old Buildings New Forms*, New York, New York, 2013, p. 46

elements and the passage of time cannot be authentically manufactured, making this design distinctive in that it put these elements on display. This glass box, on its own, would not receive the same recognition without the barn enclosure. Likewise, the barn would remain forgotten and unused without this simple, yet effective, design solution.

In many ways, the barn has been given new life. With the introduction of new program, new purpose has been granted to the old building and the surrounding landscape. The barn also has new life in terms of its aesthetic beauty. The rugged wooded slats contrast with the cold, clean and

Figure 44, Doma Gallery, Glass Box in Wooden Enclosure (Source: W Architecture)

Figure 45, Doma Gallery, Contrast of New and Old (Source: W Architecture)

machined metal structure of the new building, allowing light to beam through the

knots and cracks of the weathered façade. The façade will continue to weather and change as time passes, adding a dynamism to the building that would otherwise be missed. Layers of separation are realized in the space between old and new, forming interstitial space that is neither completely new or decidedly old, placing the user at the cross section of a material and architectural timeline.

The barns exterior, contrasted to the contemporary interior, is an acknowledgment of both the character of the place and the requirements of our time. A wholly new structure cannot achieve the same type of authenticity, character and charm that is created when two contrasting, yet complementary, elements converge to form something unique together.

Additions

In this type of intervention, the new building provides a new skin, or enclosure, for the existing building. With this type, the balance between old and new must be carefully considered as to not rob the original building of its initial function: to shelter from the elements. If the addition becomes all-encompassing, the existing building becomes purely ornamental in nature. Rather, the addition should serve as a means to enhance what exists and provide new functions that would otherwise be impossible in the older building alone. Older buildings tend to have smaller room sizes, thicker wall sections, and poorer environmental controls which creates challenges for adaptive-reuse interventions.

These additions address the ways in which we can improve various challenges of using old buildings for contemporary uses. Additions can be expansions or

extrusions of what exists; they can be parasitic in nature, imposing their will on the 'host'; or they can surround the old building, wrapping it in the comforts of modernity.

The most well-known and well-loved of the addition type is the Basilica Palladiana, of the 'wrap' classification, located in Vicenza, Italy. Known as the Palazzo della Ragione before the intervention, it was home to Vicenza's courts which occupied the large interior hall on the second floor and was in the gothic style. In

Figure 46, Basilica Palladiana, Piazza dei Signori, Vicenza, Italy, 1546 - 1614 (source: Giovanni Giaconi)

1494, a colonnade designed by Tommaso Formenton was constructed around the perimeter. However, shortly after completion in 1496 the south-west corner collapsed, and for fifty years it remained in ruin. In 1546, a council of citizens approved a design by local architect, Andrea Palladio, and in 1549 construction began.[29] It was not until 1614, thirty years after the death of Palladio, that this

[29] Francoise Astorg Bollack, *Old Buildings New Forms*, New York, New York, 2013, p. 113

addition was complete and transformed the irregular, dark-brick building into a regimented, white-marble icon of the renaissance.

Palladio's design called for a repetitive structure that had the flexibility to

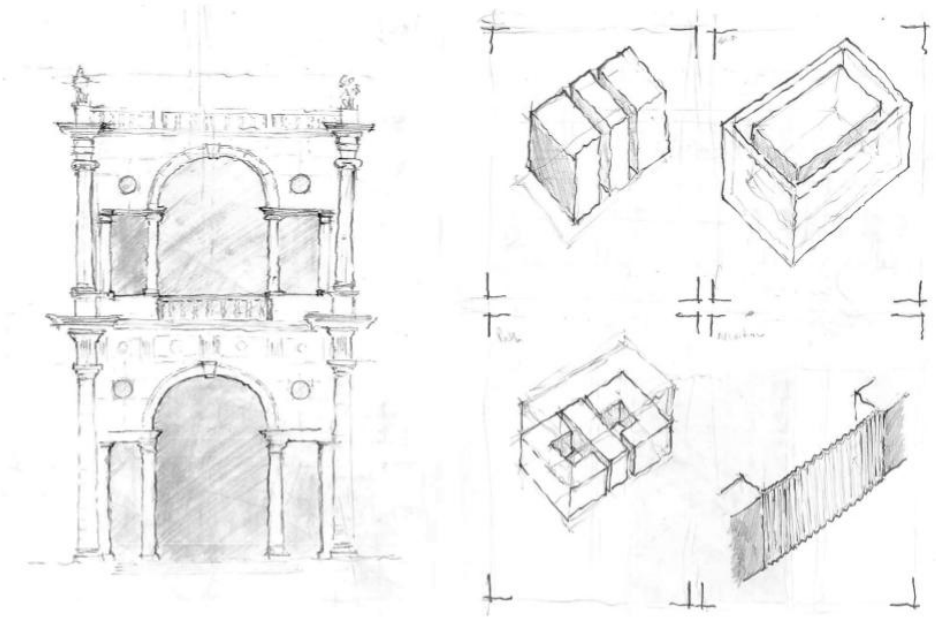

Figure 47, Basilica Palladiana, Flexible Bay (Source: Author)

adapt to the varied bay size of the existing building. The scheme is defined by its use of a central arched opening with rectangular opening to either side. While the central arch remains a constant size throughout the façade, the side windows widths "varied

Figure 48, Basilica Palladiana Arcade (Source: Katty Piazza)

to absorb the differences in the widths of the bays of the building while presenting the viewer with a seemingly regular pattern."[30]

The space created between the existing building and the new 'wrap' offers an experience that does not belong solely to the old gothic building or Palladio's intervention. Rather, the space is representative of the harmony between these two elements. The space is both indoor and out; a place for walking and a place of stasis and relaxation; respectful of what exists, but persistent in its application of contemporary style.

The practice of adding-on to existing buildings is a useful technique in preserving the character and quality of the original design, while expanding its physical footprint and programmatic function. A contemporary example of this intervention type is the National Gallery of Denmark in Copenhagen. The gallery, built in 1896, could no longer meet the necessary requirements of a modern art museum. In 1993, the museum held an open competition in which C.F. Moller

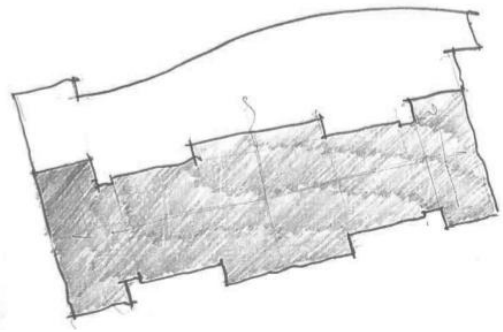

Figure 49, National Gallery of Denmark, Parti Diagram, New meets Old (Source: Author)

[30] Francoise Astorg Bollack, *Old Buildings New Forms*, New York, New York, 2013, p. 113

Architects won first prize for appropriately addressing the museum's need for more space.[31]

The concept for this addition was two buildings equal parts, but separate identities, linked by an internal street where old meets new. The design team stresses that their vision for this building was "to be neither superior nor secondary to the existing museum, but to transform it into a complete architectural work using a contemporary modernist form language."[32]

The result is a preservation of the original 1896 building and the addition of an equally-sized modern building that supports new gallery space of contemporary dimensions and new program appropriate for a museum of current standards with elevators, a café, and auditorium-style seating for large gatherings. The space created between the old and new also allows for both styles to be viewed comparatively and experienced simultaneously.

Figure 50, National Gallery of Denmark. Interior Street (Source: Author)

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[31] "National Gallery of Denmark," C.F. Moller Architects, accessed December 17, 2016, *cfmoller.com*
[32] "National Gallery of Denmark,", *cfmoller.com*

Juxtapositions

San Pietro in Montorio was built between 1481 and 1500 over an existing 9th century church. However, the Tempietto built in the courtyard of San Pietro, is not a juxtaposition of tomb to chapel, but rather a composition of contrasting architectural styles and proportions within the Tempietto itself. "The Tempietto of San Pietro in Montorio marks the arrival of small-scale research which was one of the poles of Bramante's investigation into the limits of the use of classical repertoire."[33]

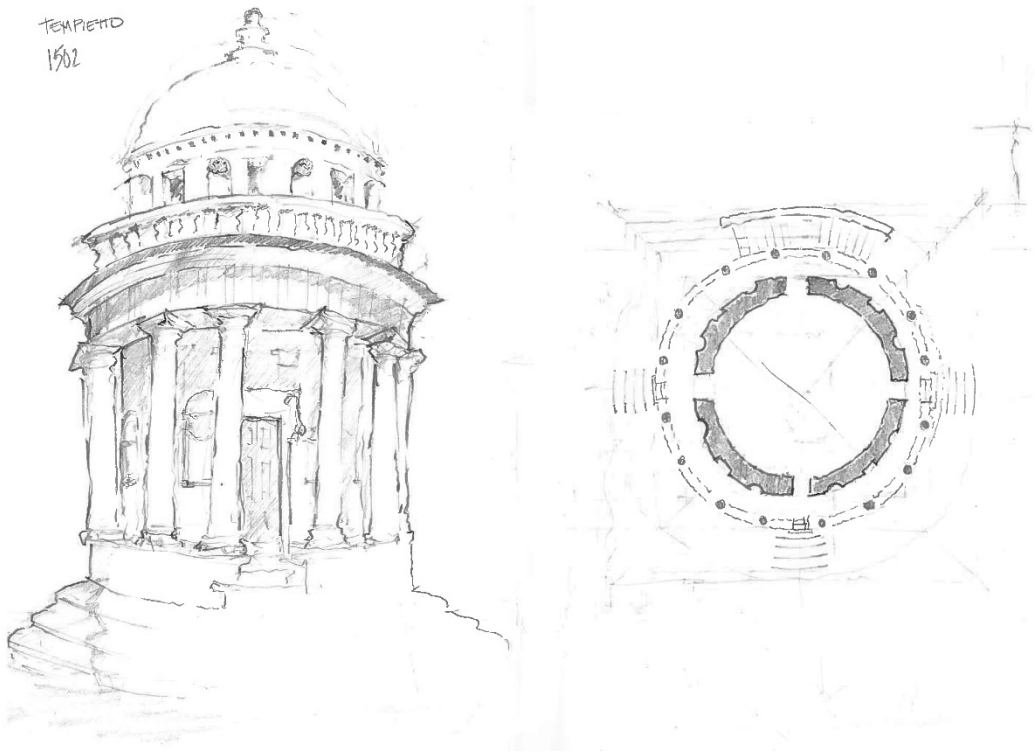

Figure 51, Tempietto, Perspective and Plan (Source: Author)

The Tempietto, Italian for "small temple", is Donato Bramante's first commission in the city of Rome and is a commemoration of the crucifixion of Saint

[33] Leonardo Benevolo, *The Architecture of the Renaissance.* Florence, Italy. 1978, p. 262

Peter, said to have taken place on the site. Bramante creates tension between the parts and the whole by applying elements of monumental architecture to a building of modest scale. The temple features a stepped base, Doric columns that support a classical entablature, and a dome that encloses a small interior space. These elements, typically suited for representing the power of gods in temples of massive scale, are brought back down to earth at the human scale in Bramante's high renaissance rendition. Bramante gives visitors the ability to circumvent the perimeter and view the elements of the temple, once reserved for scale-less works of awe, in its entirety.

In this way, Bramante is challenging our sense of perspective and challenging his own "thesis of the priority of the proportional and projective characters in relation to those of measurement."[34]

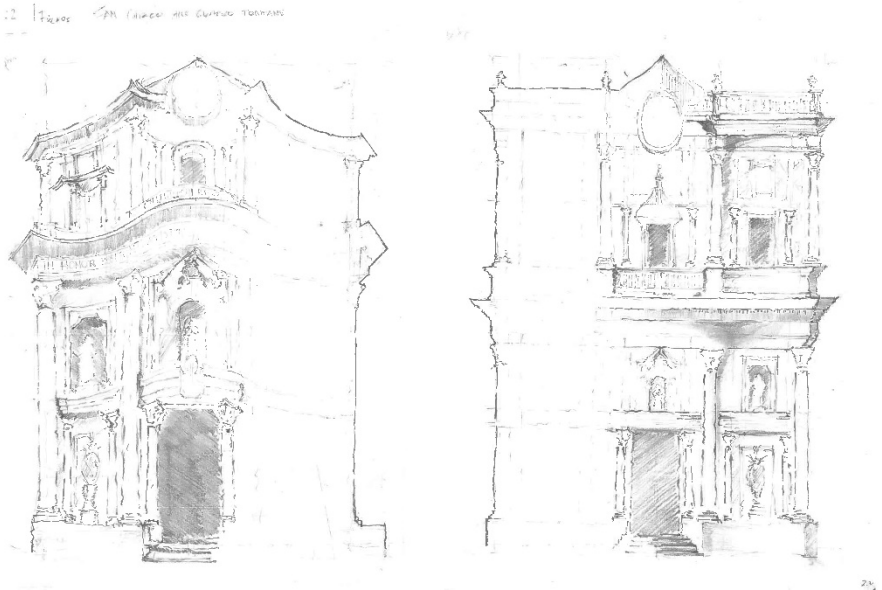

Figure 52, San Carlo alle Quattro Fontane, Two Readings (Source: Author)

[34] Leonardo Benevolo, *The Architecture of the Renaissance.* Florence, Italy. 1978, p. 262

A similar perspectival challenge comes from Francesco Borromini in 1638 with the church of San Carlo alle Quattro Fontane. Borromini uses classical elements of rigidity, order, and stasis – twisting and manipulating – to create curiously plastic and fluid forms on the façade and interior. In this work, there is a juxtaposition

Figure 53, San Carlo alle Quattro Fontane, Interior Dome (Source: Author)

between the expectation of material properties and the seemingly impossible physical arrangement created by Borromini. The two readings of San Carlo are realized in the projected, rectilinear drawings and three-dimensional, curvilinear built form; creating harmony and tension through a reinterpretation of material and style.

While these ideas of juxtaposition between perception and reality are useful from a conceptual perspective, we also must consider the physical juxtaposition of built forms. In a contemporary context, juxtaposition is typically the relationship between old and new, where the positioning of these dissimilar objects serve to

contrast one another. In Lafayette, Louisiana the Paul and Lulu Hilliard University Art Museum serves a similar purpose. The machined and polished metal and glass of the modern building provided a mirrored backdrop for the existing bundling as a means to reflect what came before, not to replicate.

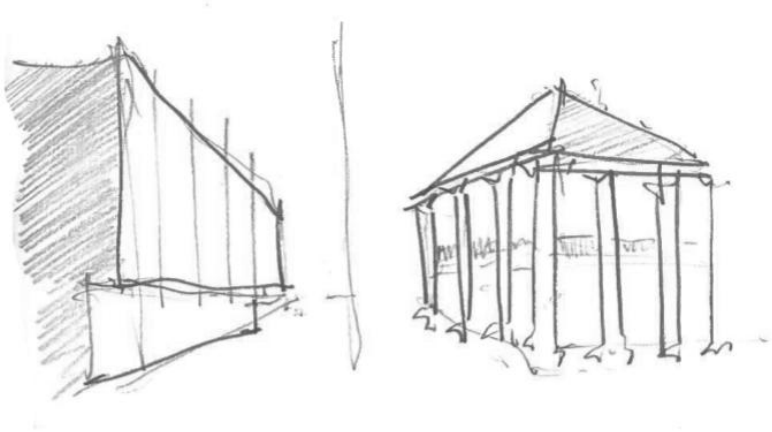

Figure 54, Juxtaposition of New and Old (Source: Author)

The design, executed by Eskew + Dumez + Ripple, uses a contemporary material pallet but borrows a familiar, repetitious ordering system. The mullions beyond the glass mimic the verticality of the Doric column, and stop short of ground, creating a portico-like transition from exterior to interior. While the building is visually dominating, there is a certain quietness that results from playing a supporting, and reactionary role to its existing, older sibling.

Figure 55, Paul and Lulu Hilliard University Art Museum (Source: Eskew+Dumez+Ripple)

These interventions of inserting, adding, and juxtaposing can be applied at various scales and with a range of intensities throughout our building. In the next section we will examine various program precedents to better understand and define the vision of this building, the functions it will provide, and the people it will serve.

Chapter 4: Program

Vision

The buildings of the Poole & Hunt Foundry and Machine Works Company complex were first designed to cast and construct major components in metalworking and engineering.[35] Today, this same space can be used for individual expression and allow for people to explore their passions. In the space across from the site, a glass-products galley serves a dual function by providing a waiting area for the adjacent restaurant. We can build off this success and apply concepts of studio culture from our own experiences to provide spaces of overlap to attract the creative and collaborative spirit.

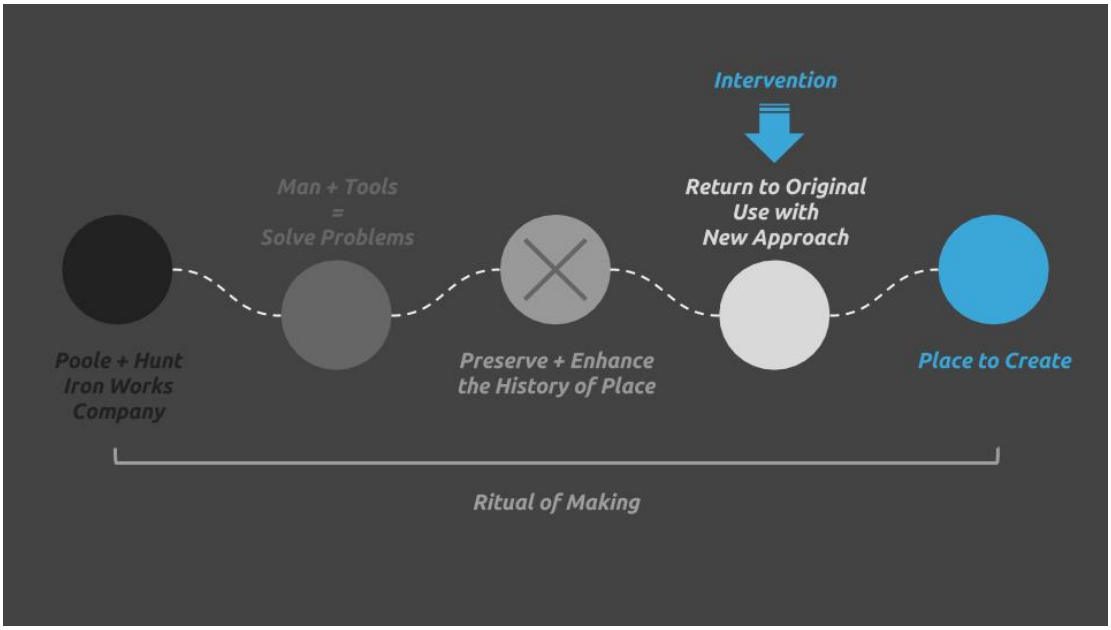

Figure 56, Program Type, Reviving the Ritual of Making (Source: Author)

[35] Cathrine F. Black, *National Register of Historic Places Inventory*, Baltimore, Maryland, 1972, p. 2

The Poole & Hunt Company was a place where people, enhanced by the application of tools, were able to solve problems and create solutions-based machinery. As stated in the introductory chapter, we identified the preservation and enhancement of the site's history as one of our goals. In this chapter, we will explore the various ways designers have paid homage to the past use of a building, while still applying contemporary program. Through the transformation of physical form –

Figure 57, Vision for Program (Source: Author)

Chapter 3: Precedent – and the application of new use – Chapter 4: Program – we can begin to substantiate and validate the design choices in the following section – Chapter 5: Design.

The programmatic vision is a place for people to learn from one another, be exposed to new cultures and people, and create new things together. This building could serve aspiring artists, entrepreneurs, craftsmen, chefs, professionals, etc. under one roof, where collaboration and interaction are the essential components to success. In providing a place where people can come together, apply modern tools and techniques, and create we are seeking to revive the ritual of making on the site where the Poole & Hunt company once stood.

Space Defining Elements

There are three major spaces in the project building. First is the major space that occupies the total height of the building from grade to roof. Second is the mezzanine level that occupies the upper half of the rear third of the building on the south side. Third is the space below the mezzanine level that is defined on its northern side by a series of columns, separating this space from the adjacent "great space"

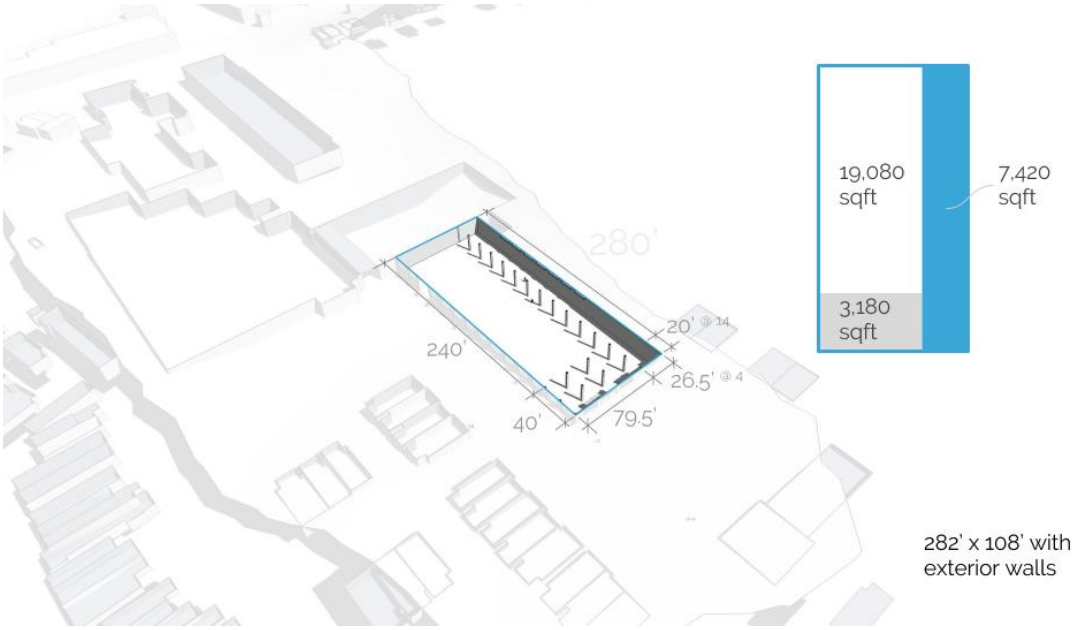

Figure 58, Building Dimensions and Major Spaces (Source: Author)

The major space that extends from the ground floor at grade to the monitor skylights should be the most public and encompassed the entire "great space." This space is best suited for the "create" program, remembering the original use of the building, but providing a wider range of products. The products are determinant of the user, and the user is any willing participant.

The second space, looking over the major space, would be of the learning space-type. This space would serve as the formal partner to informal and creative

space that it overlooks. This space will be more geared towards a traditional educational environment and provide space for meeting and studying as well. This space is a way to compliment the space to the north, (the maker space) to empower the user to create and make their own things and interact with people from diverse subject areas.

The third space is of the applied learning type. This is a space where people can be educated about the complexities and finer details of the craft. While the great space is for exhibiting, sharing, and collaborating, the space under the mezzanine is for learning how to make new things, iterate their concept, and apply what they have learned to further their investigations.

Figure 59, Concept Sketch, Program Arrangement (Source: Author)

The first space will also serve as exhibition space to complete the "circle of program" where student works can be displayed and shared to a wider audience in the community.

The zone in which this site is located is OR2, appropriate for the program described above, allowing for primary office and supplementary residential. In addition to the building itself, we will consider the redevelopment of the adjacent areas of low-density housing to the northwest and southwest of the site.

In the next section, we will document three examples collaborative, mixed-use program; first, a flexible office space for growing businesses; second, an arts center that invites public engagement, and third, a cultural hub and housing center.

Programmatic Precedent

In this section, we will explore three approaches to collaborative, mixed-use program and expand on the strategies that make these organizations successful. These approaches exploit the advantages of overlapping use-types and solidify its place in contemporary program considerations. These approaches, that favor integration of disparate focus areas over isolation, are becoming more common in institutional, corporate, and commercial worlds – recognizing that diversity of people, thought processes, and expertise foster innovation and progress.

This same methodology can be applied to educational environments that encourage collaboration and process-oriented learning.

HQ

Located in Raleigh, North Carolina, HQ provides access to flexible, affordable office space for entrepreneurs to build their businesses and collaborate with a community of allies.[36] As the corporate market has shifted toward remote access and digital communication, a need emerges for a physical space for interaction.

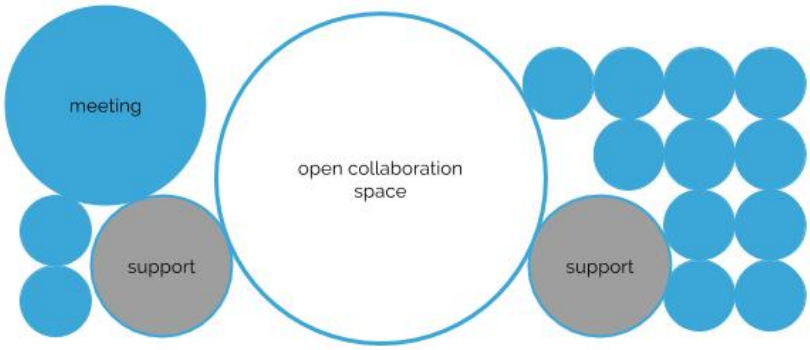

Figure 60, HQ Raleigh, Program Arrangement (Source: Author)

The office is organized around a central collaboration space that features an open floor plan, meeting tables, a full-service kitchen and coffee bar. This space is used to host workshops, seminars, and social events. Around the perimeter of this space, and occupying the remained of the ground floor, are private, turn-key office suites that are segmented

Figure 61, HQ, Open Collaboration Space (Source: HQ Raleigh)

[36] "Who We Are", HQ Raliegh, accessed December 17, 2016, *hq.community/who-we-are*

into two parts, a meeting room and a traditional office, within the suite.

In total, HQ has 22 office suites; 2 large conference rooms; 6 small meeting rooms; a multipurpose room for classes, workshops, and events; a café space with kitchen and bar; and co-working space weaved throughout the building. This program arrangement provides space-types that range from casual and collaborative to private and individual-focused.

Figure 63, HQ, Conference Room (Source: HQ Raleigh)

Figure 62, HQ, Co-Working Space (Source: HQ Raleigh)

Torpedo Factory Arts Center

Located in Alexandria, Virginia, the Torpedo Factory Arts Center seeks to foster connections between artists and the public. This symbiotic relationship has been a crucial part of this Arts Center's mission since its conception in 1974, allowing the public to view art up close, in person, and in progress.[37] The Torpedo Factory is defined by three major elements; first, they have permanent studio space for artists to work; second, classroom and workshop space is provided for learning

[37] "About", Torpedo Factory Art Center, accessed December 17, 2016, http://torpedofactory.org

about art; and third, gallery space and an interior commercial corridor allows for visitors to purchase artwork and support local artists.

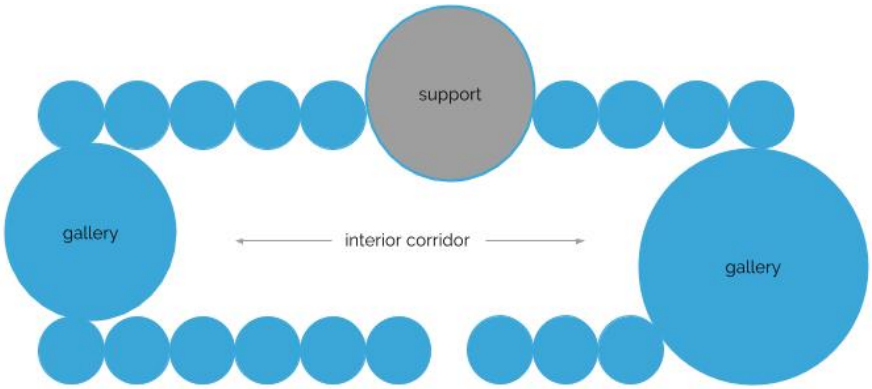

Figure 65, Torpedo Factory Arts Center, Program Arrangement (Source: Author)

The Torpedo Factory prides itself on being the largest collection of working artists' studios in a single location. With 82 unique artists' studios, the Arts Center features a wide range of art-types including painting, ceramics, photography, jewelry, glass working, metal working, printmaking, sculpture, and also provides space for musicians, dancers, and comedians to perform. The Torpedo Factory has proven to be one of Alexandria's most well-loved attractions, drawing over 500,000 visitors each year to learn about, make, and buy art along the Potomac.

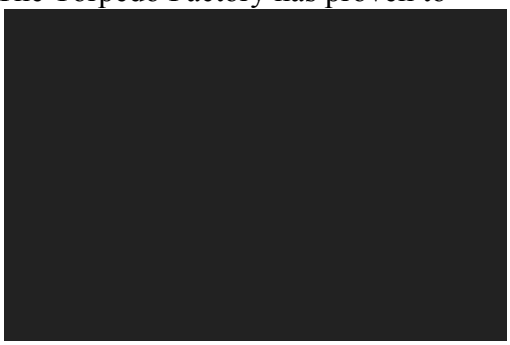

Figure 64, Naval Torpedo Station, Final Torpedo Made, 1945 (Source: Alexandria.gov)

Additionally, the venue can be rented out for private events including wedding ceremonies and receptions, corporate meetings, birthdays, etc., with space capacities ranging from 25 to 450 people. The strength of the Arts Center is their ability to connect people

Figure 66, Torpedo Factory Arts Center, Interior Corridor (Source: visitalexandria.com)

with the process of making, while also providing a way for artists to make a living doing what they love.

Roombeek Culture Cluster

Located in Roombeek, a town within the municipality of Enschede in the Netherlands, the Culture Cluster is a mixed-used development built in an old warehouse district. This development was built after a fireworks factory had exploded, razing a large swath of city fabric and destroying a majority of their cultural landmarks and housing.[38]

Figure 67, Aftermath of Explosion, Roombeek, 2003 (Source: visitenschede.nl)

Figure 68, Roombeek Culture Cluster, Axon Render (Source: seARCH)

[38] Frank Peter Jager, *Old & New: Design Manual for Revitalizing Existing Buildings.* Ba: Birkhäuser. 2010, p. 42

Figure 70, Roombeek Culture Cluster, Weaving Structure (Source: seARCH)

Figure 71, Roombeek Culture Cluster, Metal Mesh Facade (Source: seARCH)

The mission was to revive the history that had vanished with the loss of these industrial monuments by rebuilding around one of the only remaining factories left undamaged. This building, a textile factory from 1907, would serve as the inspiration for design, featuring an ascetically weaving structural system and a fabric-like metal façade on the exterior of the tallest, and most prominent new member of the complex. In addition to the treatment to structure and material choice, the program itself weaves throughout the complex, blurring the boundaries between different use-types and bringing various end-users closer together.

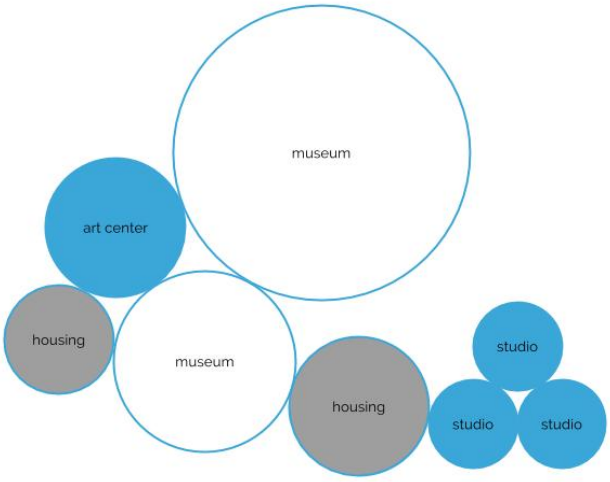

Figure 69, Roombeek Culture Cluster, Program Arrangement (Source: Author)

In total, the Culture Cluster houses 130,000 sqft of program featuring four main elements: a museum and café, an arts center, studio space for artists, and housing. Described by author Frank Peter Jager, this complex is a "phoenix in chain mail", built from destruction and now stronger than it once was.[39] The end result is a collection of eclectic building styles and uses, that converge to form a place that has historical artifacts and progressive ideals.

STEAM

Throughout the design process, elements of the project are constantly evolving. As the issues of site and building become more clear and the design becomes more refined, the program must also adapt. The final program will combine various ideas from the programmatic-precedent study, but will be unlike any individual precedent. The program is a STEAM (Science, Tech, Engineering, Art, Math) high school curriculum focusing on a collaborative environment with emphasis on applied learning through creating and making. This thesis aims to preserve the history of the building and enhance its sense of place, through program and architecture, by reviving the ritual of making.

The school will feature labs for environmental science, biology, chemistry, physics, and plant science. Workshops will provide spaces for woodworking, robotics, art, film, and digital media. Core study areas including math, english, world language, history, social sciences, etc. will take place in traditional classrooms.

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[39] Frank Peter Jager, *Old & New: Design Manual for Revitalizing Existing Buildings.* Ba: Birkhäuser. 2010, p. 42

The nature of this program will allow for the initial vision of learning, creating, and collaborating to manifest itself in an academy for young adults. Introducing students to analytical and creative thinking methods concurrently will allow for more robust cross-collaboration between study areas and strengthen the relationship between science and the arts. Additionally, some spaces within the school may be used for alternative users when class is not in session – nights, weekends, and summers – so that the building can reach a larger audience in the community.

The STEAM program represents a balance between science and art, and relates to a larger theme of balance that will manifest itself in the architecture. In the next section, we will see how this theme of balance informs the design process, allowing for collaboration between science and art; integration of old and new architecture; and the weaving of built forms with the natural landscape.

Chapter 5: Design

Initial Approach

The initial approach to the site will be to focus on the three areas in which intervention types – insertion, addition, and juxtaposition – would be most appropriately applied. As a result of our analysis, we can identify three areas of the site that will allow for development; the Tractor Building itself (Bldg. No. 21), the addition and surrounding area to the south (Bldg. No. 21.A), and the 100' x 100' open lot directly to the building's west.

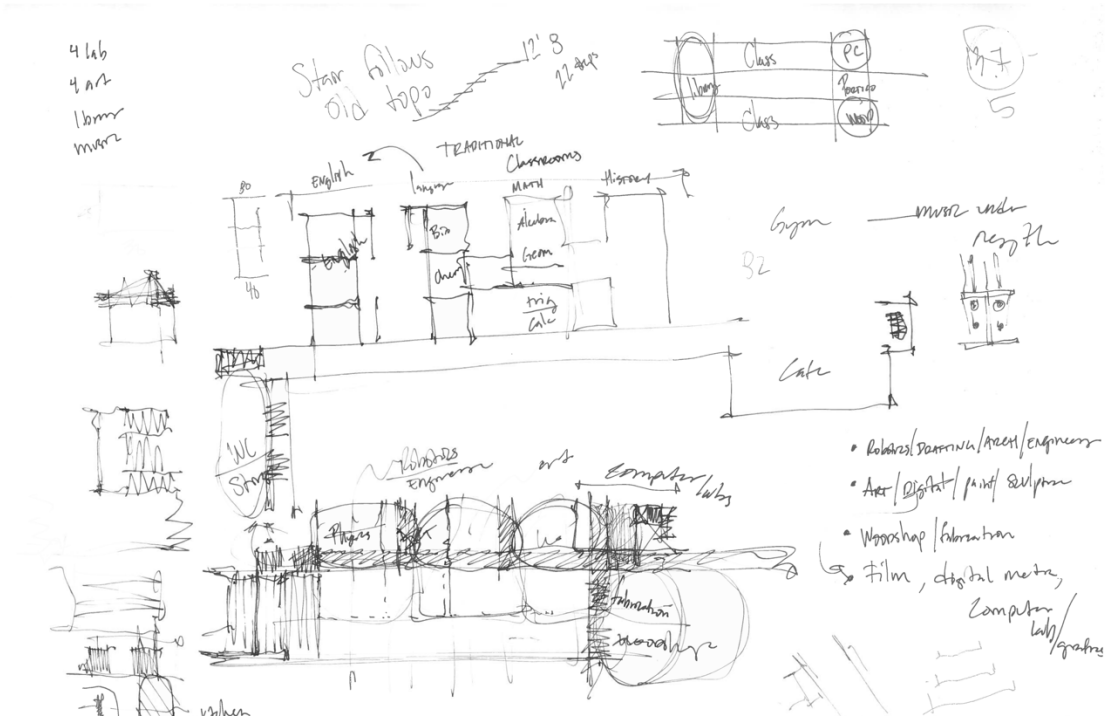

Figure 72, Process, Plan (Source: Author)

The main structure, the Tractor Building (Bldg. No. 21) is best suited for an "inserting." This type of intervention is characterized by its "parasitic" quality, where the new construction is developed within the shell of the existing building. The central nave space is best suited for open, flexible workspace. The side aisle will

house the workshops that open out onto the nave space, while the mezzanine level will house traditional classrooms, meeting rooms, and study rooms.

Figure 73, Tractor Building, Asymmetrical Basilica (Source: Author)

The southern edge of the building, facing towards the slope of Druid Hill Park lends itself to the "addition" strategy of intervention to bring function to the rear of the building, as well as engage with the surrounding natural context. The program in this zone will relate to a more intimate scale and address the character of Druid Hill Park to the south.

Figure 74, Tractor Building, South Façade (Source: Author)

The 100’ x 100’ open lot to the west of the Tractor Building is an opportunity to engage the streetscape and reveal contemporary elements of the design. In this area, the strategy of “juxtaposing” will be implemented to contrast the old and new while bringing program to the street edge.

Figure 75, Tractor Building, West Facade facing adjacent lot (Source: Author)

The main volume of the building itself will determine the program of the adjacent spaces to the south and the empty lot to the west. Therefore, we will first explore the insertion intervention type, followed by the addition type, and finally juxtaposition.

The major space that extends from the ground floor at grade to the monitor skylights should be the most public and encompassed the entire “great space.” Following the theme of “making”, the initial design approach would be to host this creation in the large, central space; remembering the original use of the building, but with a contemporary program and collaborative approach.

The second space within the shell of the existing building, looking over the major space, would contain traditional classroom layouts. This space would serve as the formal partner to informal and creative space that it overlooks. This space will be more focused on providing a traditional learning environment and offer space for

meeting and studying outside class-hours. This space is a way to compliment the space to the north, (the maker space) to empower the user to create and make their own things and interact with people who may be seeking to achieve similar goals.

The third space is of the "communal" type. This is a space that will serve as a compliment to the large nave within the Tractor Building, by providing places for lectures, athletics, music, etc. These large spaces, in the Tractor Building and in the proposed building, should be capable of functioning independently of one another, allowing for concurrent events to be taking place in each space without interference.

There are several factors that we must also keep in mind. First, the new buildings should be set-back from the old building, allowing for it to be viewed on the oblique.

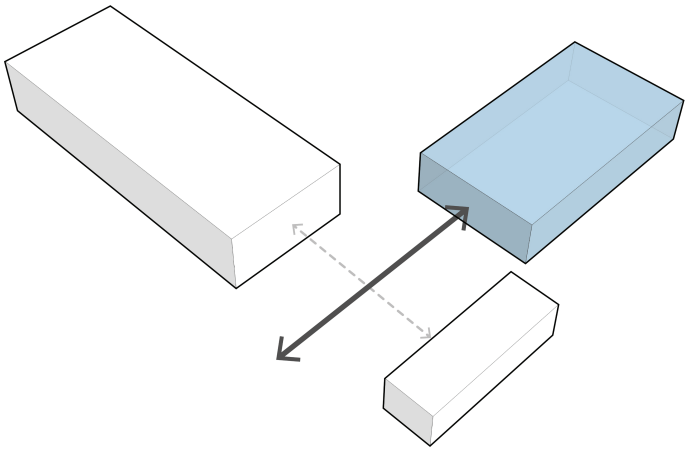

Figure 76, New Building Set-Back, Creating an Entry Plaza (Source: Author)

Secondly, we must consider the site's steep slope that abuts the building to the south and rises towards Druid Hill Park. The proposal must allow for water to flow naturally down the hill to reach the base of the building where it is collected.

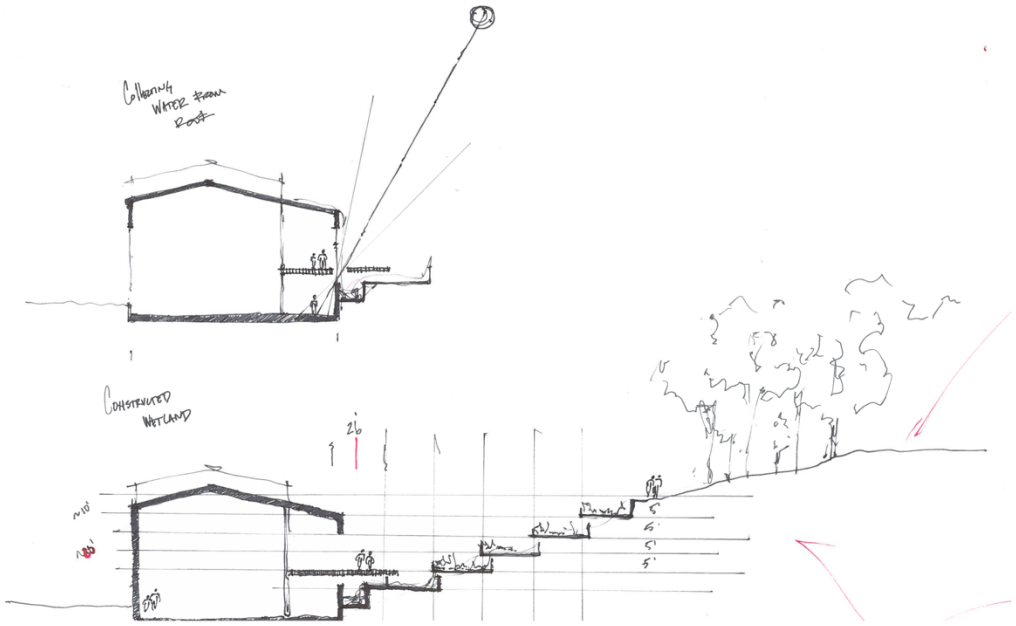

Figure 77, Process, Water Flow (Source: Author)

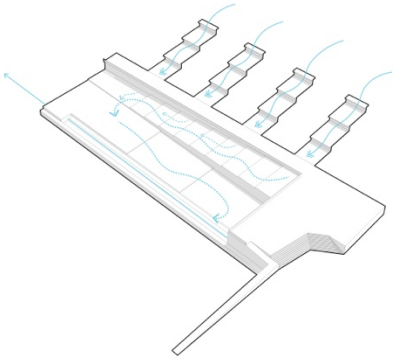

Figure 78, Constructed Wetland, Water Flow (Source: Author)

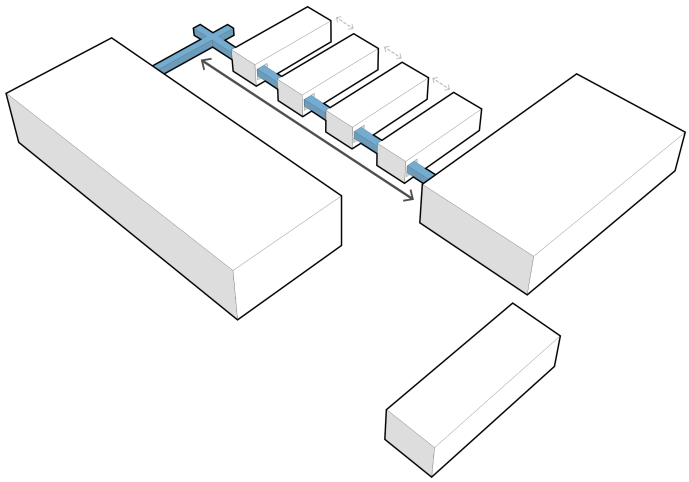

Figure 79, Pavilions in the Landscape, Allowing Natural Water Flow (Source: Author)

Lastly, the new building must be delicate at its connections with the old building, as to not adversely affect its character and aesthetic.

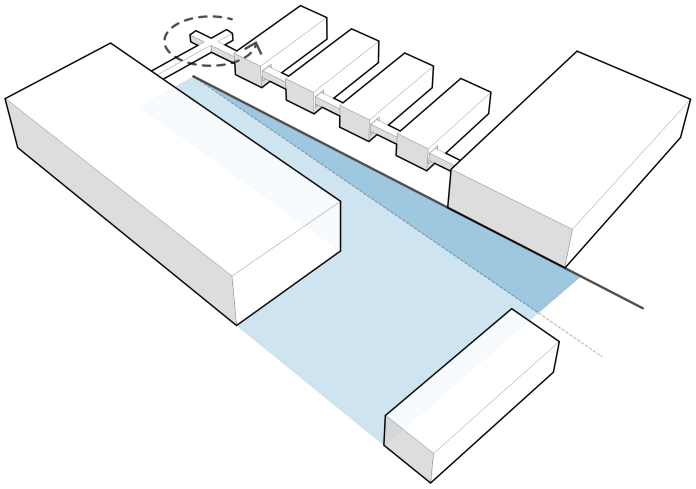

Figure 80, Delicate Connection, Rotation of Axis (Source: Author)

Design Proposal

In the final iteration of this design, the approach will attempt to weave the natural and the manmade, referencing both the site's picturesque and industrial history. The proposed design will create a procession, leading up to, and arriving at the large space located in the historic Tractor Building. This sequence is comprised of four distinct zones: 1. The Plaza and Wetland, 2. The Communal Building, 3. The Bridge & Science Labs, 4. The Workspace & Classrooms.

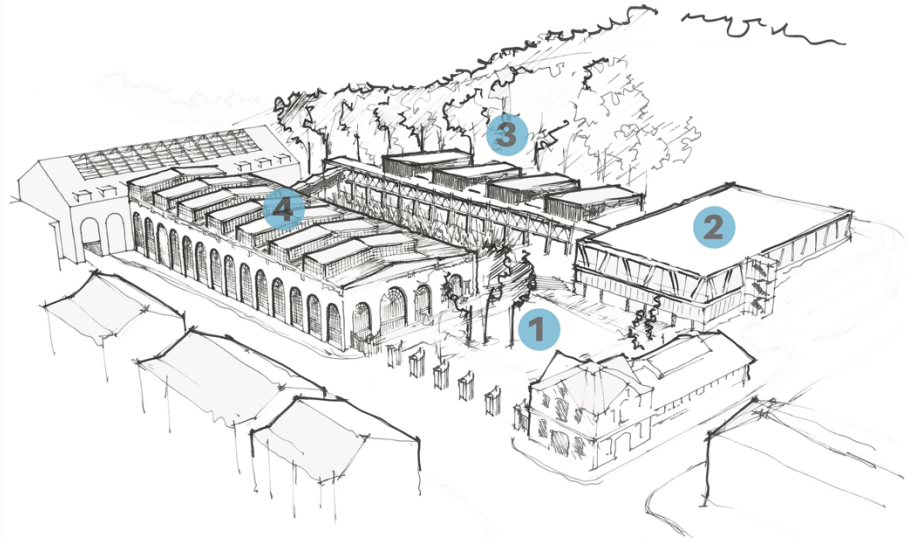

Figure 81, Sequence, Arriving at the Tractor Building (Source: Author)

While the Tractor Building is sufficient in providing space for the maker space, the program is also in need of other space types, ranging in size and function. The program will require additional large-volume space, containing a lecture hall, gymnasium, cafeteria, library, and service; medium-sized space for science labs and traditional classrooms; as well as small-sized spaces for offices, meeting rooms, and study rooms.

In designing these spaces, the 20’ module of the Tractor Building will be used to proportion the space of the new buildings. By borrowing the scale from the existing structure, we can ensure that the old and the new are closely related.

Figure 82, 20' Bay Module, Tractor Building (Source: Author)

The majority of the large, complementary space will be located off the plaza, in the communal building. This building is connected to a bridge-like structure on its upper-most level, and allowing access to the science lab classrooms that sit as pavilions along the hill. The terminus of the bridge corridor is met with a feature stair that is elevated above the constructed wetland and spans the distance between the new buildings and the old. This stair lands on the mezzanine level of the Tractor Building, delicately inserted into one of the large, arched openings along the southern façade.

Figure 83, Tractor Building, Arched Windows and Monitor Skylights

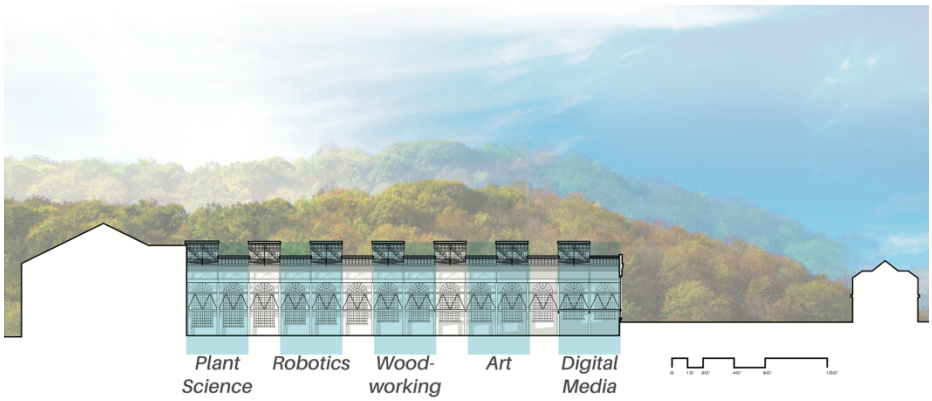

Figure 84, Workshops, Tractor Building (Source: Author)

The mezzanine level of Tractor Building contains traditional classroom layouts along its southern edge, with smaller meeting rooms and study rooms on the third floor, and the large workspace on the ground floor. The space below the mezzanine is home to all the workshops containing plant science, woodworking, robotics, art, digital media, and film that surround the edge of the full-heighted great space. This central space is open and flexible, promoting a collaborative learning environment and allowing for students in various classes to share their work with one another.

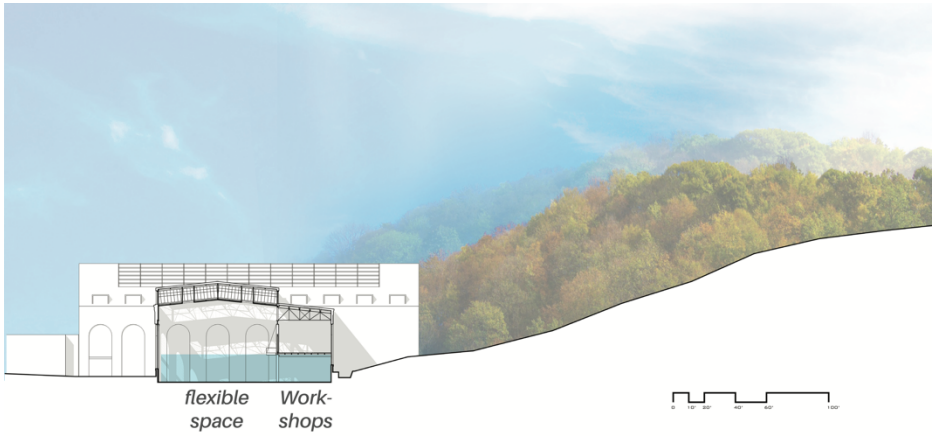

Figure 85, Transverse Section, Workshops and Flexible Space (Source: Author)

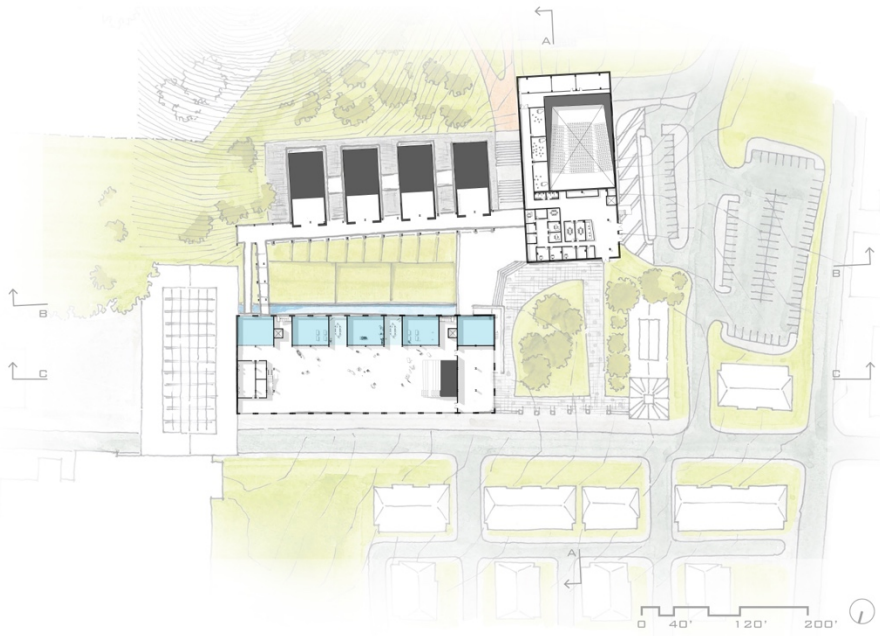

Figure 86, Ground Floor Plan (Source: Author)

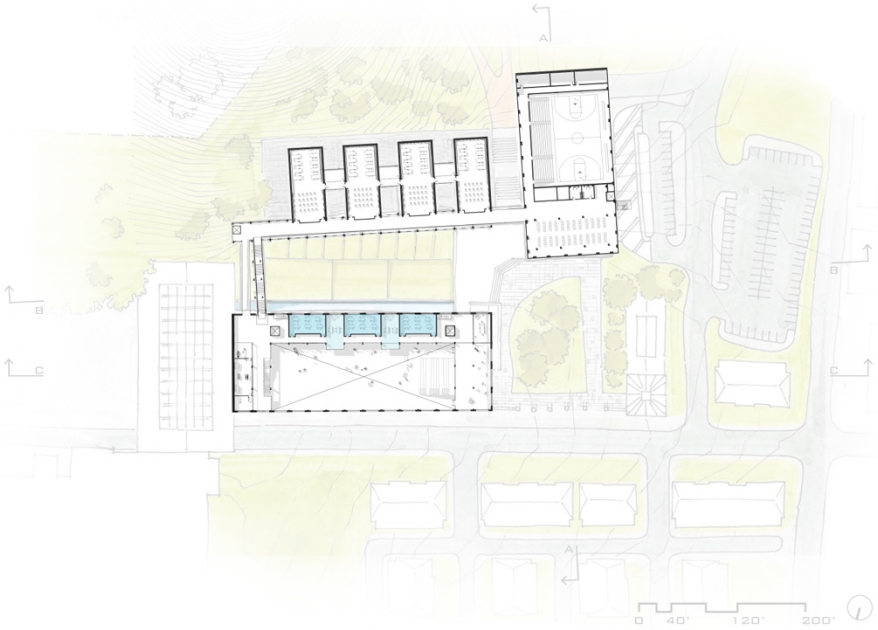

Figure 87, Mezzanine Level of Tractor Building, 3rd Floor of New Buildings (Source: Author)

The Plaza & Wetland

Figure 88, Entry Plaza (Source: Author)

The entry plaza is flanked by the Tractor Building and the Wagon House to the east and west, respectively, and is defined by the communal space building on its southern edge. The plaza is a mixture of paving stones and green spaces with trees placed throughout. The plaza slopes slightly to the south and allows access to the communal building's ground floor on-grade. On its south-east corner, the plaza gives way to a set of amphitheater-style stairs that lead up to an elevated outdoor-patio that overlooks the constructed wetland, while also providing access to the second floor of the communal building.

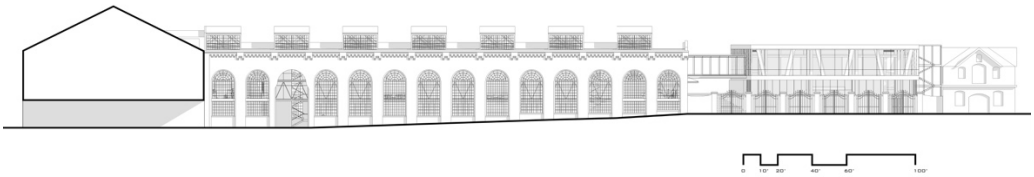

Figure 89, North Elevation, Tractor Building (Source: Author)

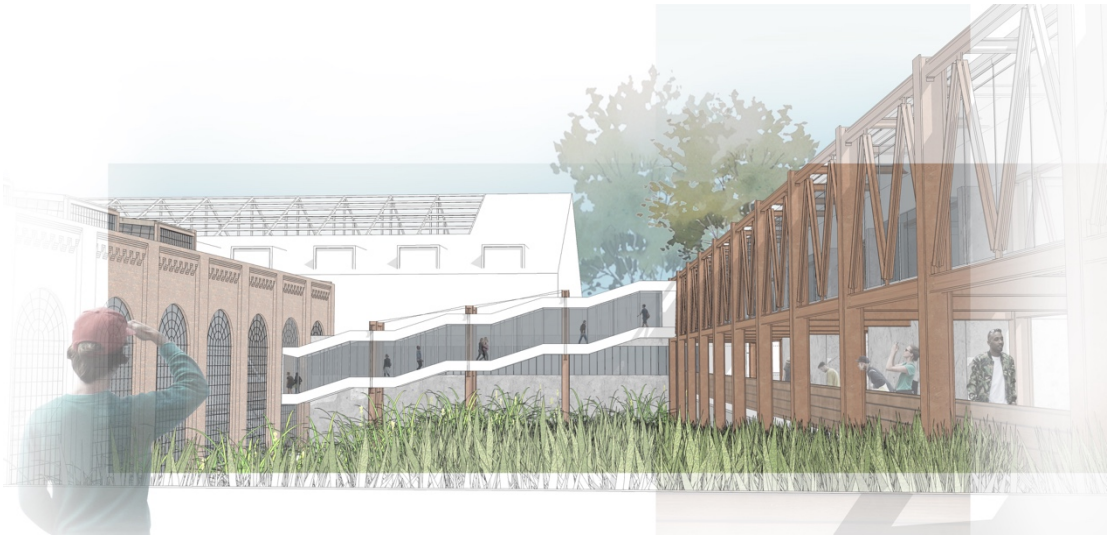

Figure 90, Wetland Overlook (Source: Author)

The constructed wetland is situated between the Tractor Building and the bridge. The design allows for water to flow between the classroom pavilions, down an aeration course, through the wetland itself, and finally a cistern at the base of the hill. This wetland will naturally filter rainwater that falls on the site, providing greywater for use throughout the building complex.

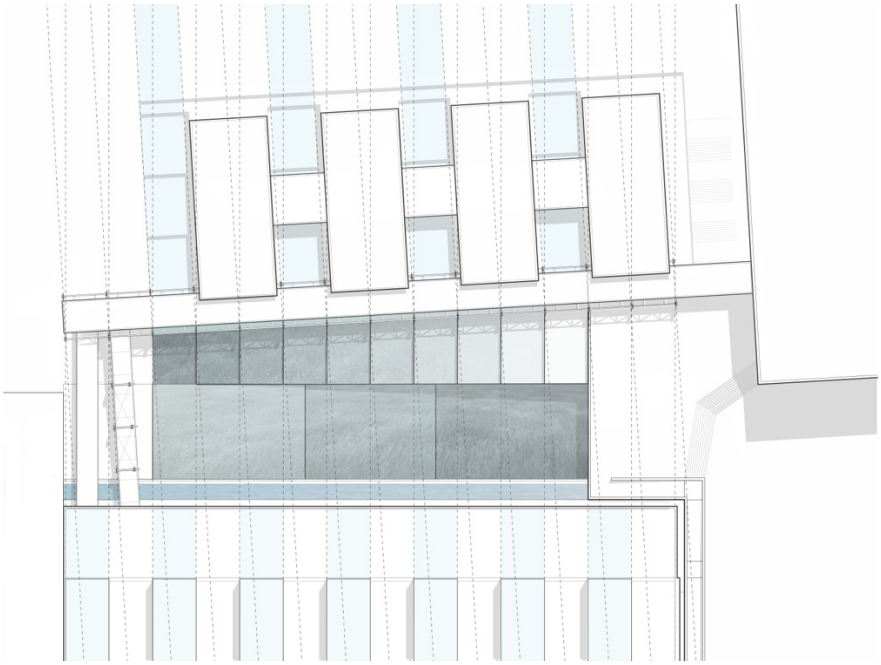

Figure 91, Wetland, Proportions and Organization (Source: Author)

The Communal Building

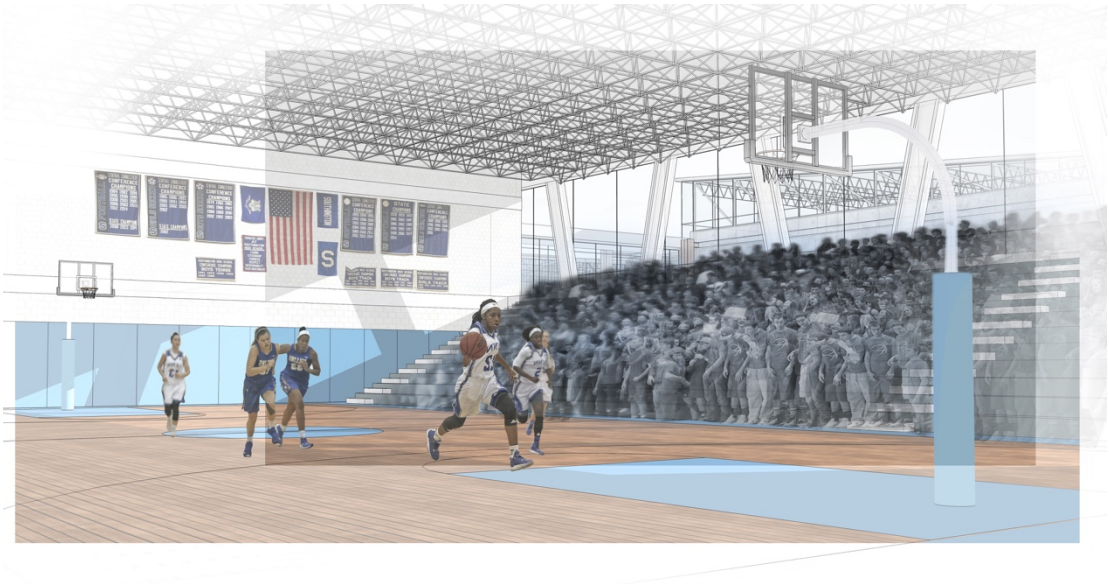

Figure 92, Gymnasium, The Communal Building (Source: Author)

The communal building houses the majority of the large-space program including the lecture hall, gymnasium, cafeteria, and library. Also, included in this building is the administrative offices towards the front of the building and the service program – loading and mechanical – is located at the rear.

The entrance is located at the north-west corner of the building, and can be accessed on-grade from the plaza. The entry leads to a lobby area that serves both the administrative offices and the lecture hall. The lecture hall seats 400 for presentations, plays, and performances. It also features three music rooms on its east side for classes and dress rehearsals.

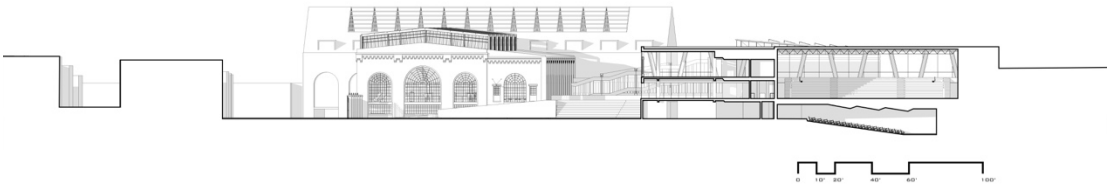

Figure 93, Section through Plaza and Communal Building (Source: Author)

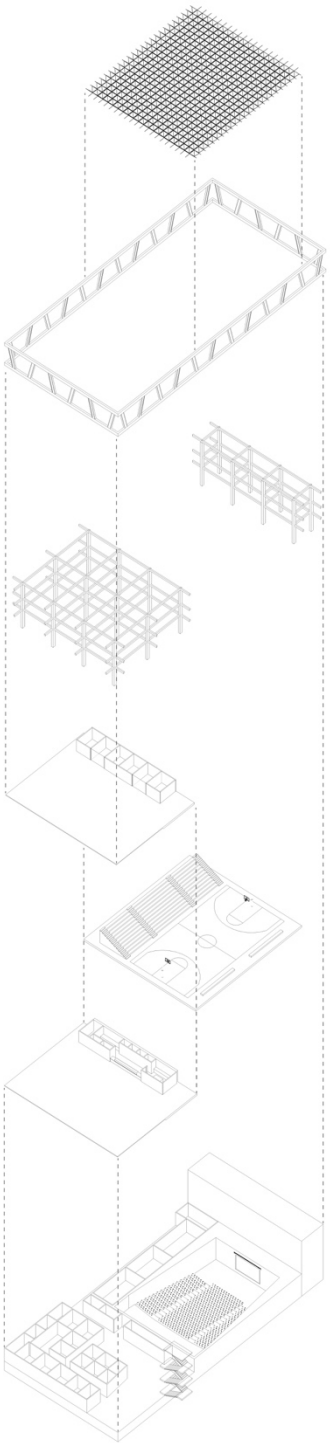

Figure 94, Communal Building, Exploded Axon (Source: Author)

A stair is located off the lobby space on the west façade of the building. This stair is reminiscent of stairs typically found on the exterior of mills in the surrounding area. This stair is enclosed in class and has landings on each floor, axial to the path of main circulation.

The second floor has a cafeteria towards the front of the building, with access to the outdoor patio to the east. To the south of the café, and at the rear of the building is the double-heighted gymnasium – a space that measures 98' wide and 104' in length – supported by a space-truss.

The third, and upper-most level of the communal building is home to the school's library collection. This area has both traditional and digital media to appeal to various methods of learning and pedagogy. The library has an open

floor plan with a reading area along the north façade, overlooking the plaza. The library stacks separate the reading area from the small meeting rooms to the south with the main circulation path, connecting the stair to the bridge, in between.

Figure 95, Library, View Towards Bridge, Communal Building (Source: Author)

This circulation path forms a corridor connecting the library level of the communal building to the four science lab pavilions along the hillside.

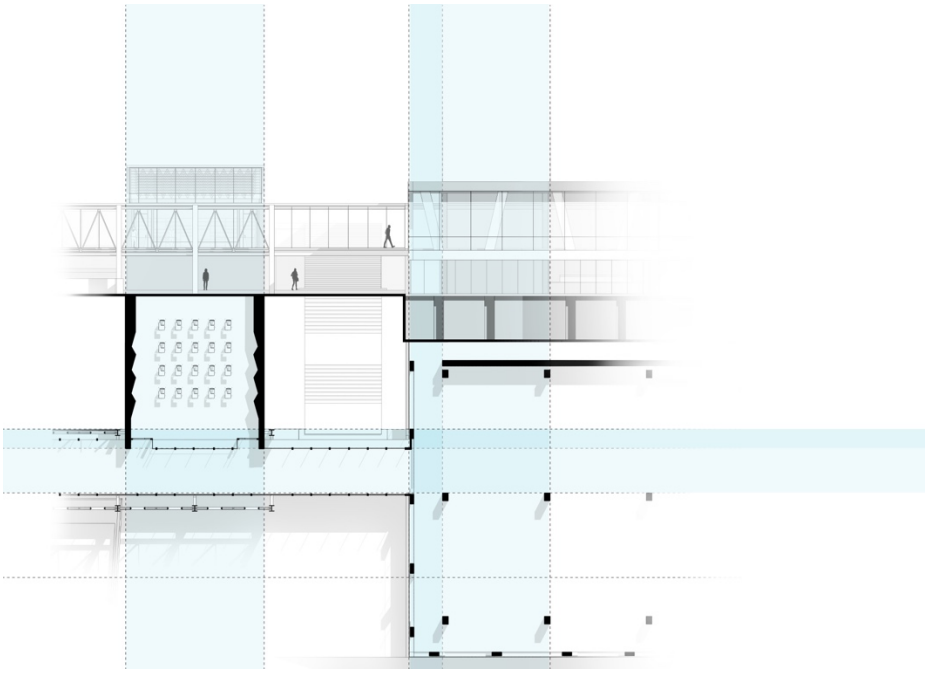

Figure 96, Library Connection to Bridge and Science Labs (Source: Author)

The Bridge & Science Labs

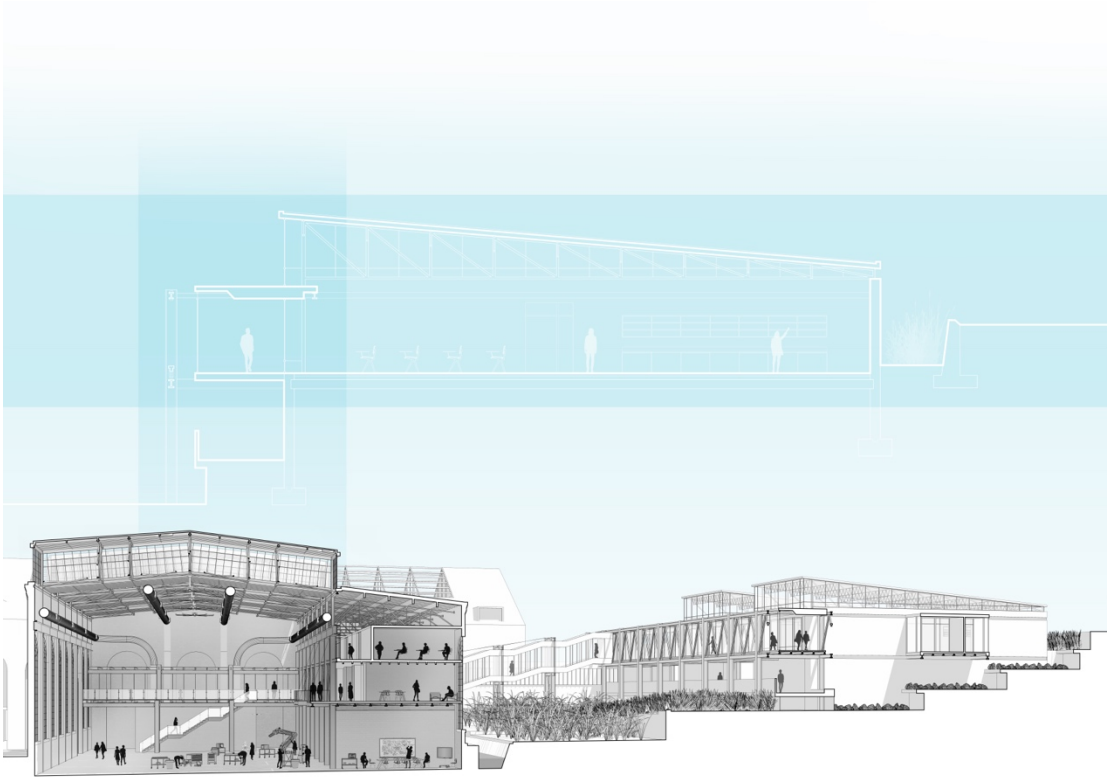

Figure 97, Section Perspective (Source: Author)

This bridge-like structural element rises above the ground providing access to the four science lab pavilions in the landscape, also allowing for rainwater to travel from the top of the hill through the aeration course and down to the constructed wetland below. This wetland features a series of terraces that will naturally filter the water to be used as greywater throughout the site.

Visually, this structure borrows its language from the interior of the tractor building that employs the same system to supports its mezzanine level. This bridge also acts as a corridor to provide access to the 4 pavilions built into the landscape - containing traditional classroom layouts for math science language and history, as well as offices and more meeting space between the volumes. And like the bridge it's

attached to, these too borrow from the old building - continuing the slope of the roof and resembling the monitor skylights that are so important to this building's character.

Figure 98, Bridge (Source: Author)

The bridge is suspended above the wetland, providing visual access to the landscape and the southern façade of the Tractor Building across the way. The Bridge is supported by a structural box-truss with interior glazing offset from its outermost limits. A sculpted ceiling plane reviles the structure overhead, explicit in showing its tectonics.

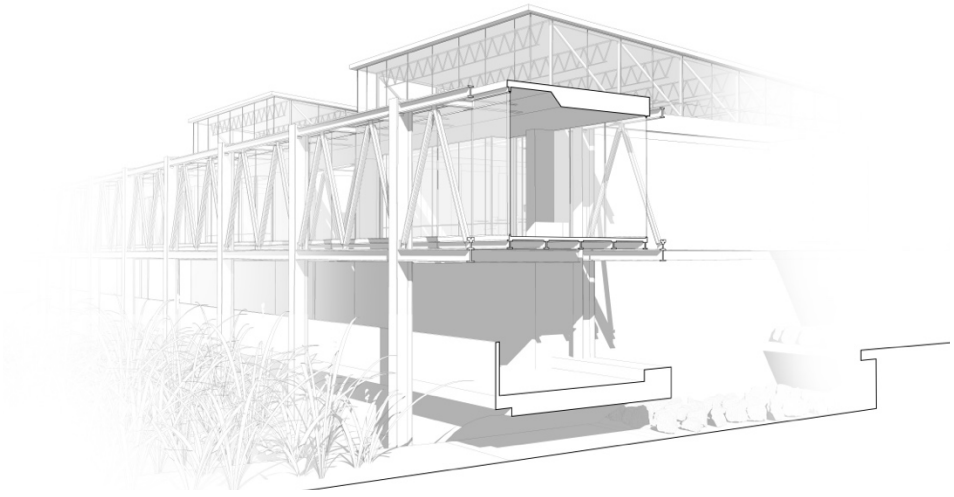

Figure 99, Bridge Section Perspective (Source: Author)

The science labs that the bridge serves are constructed of poured-in-place concrete walls with a southern-facing angled roof, supported by a steel trusses. The roof is angled with clearstory windows around the perimeter off the concreate base – with the smallest clearstory windows, measuring two feet towards the south, growing to eight feet on the north façade, allowing for diffuse and even lighting.

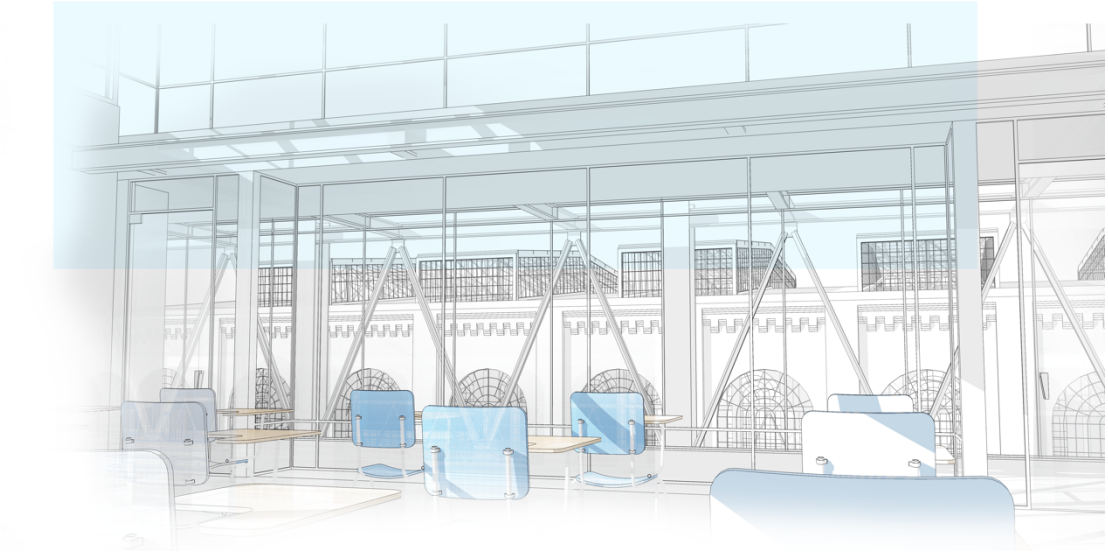

Figure 100, Science Lab Classroom, Seated, Looking towards Tractor Building (Source: Author)

The classroom is organized into two main parts: student desks for lecture-style lessons and lab tables for experiments and applied learning. The walls closest to the bridge corridor are angled to exhibit work for students to see as they pass by. In between each large science lab are smaller meeting spaces and offices for teachers.

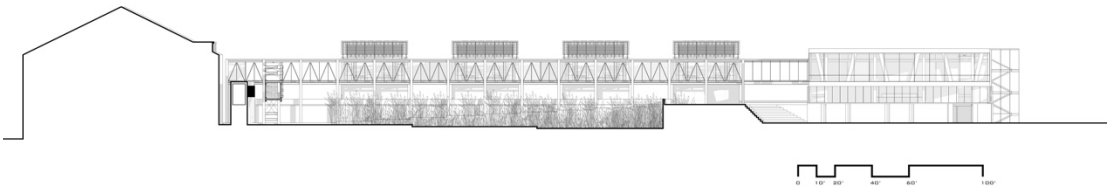

Figure 101, Bridge & Science Labs, North Elevation (Source: Author)

The Workshops & Classrooms

Figure 102, Workspace, Tractor Building (Source: Author)

The sequence leads up to, and culminates, in the historic Tractor Building. The feature stair that connects the bridge to the mezzanine level of the old building is inserted through one of the arched openings on the Tractor Building's south facade. This connection is designed to be sensitive to the integrity of the existing building; delicate at its connection and careful not to add anything unnecessary to the exterior.

Figure 103, Feature Stair, Connecting Bridge to Tractor Building (Source: Author)

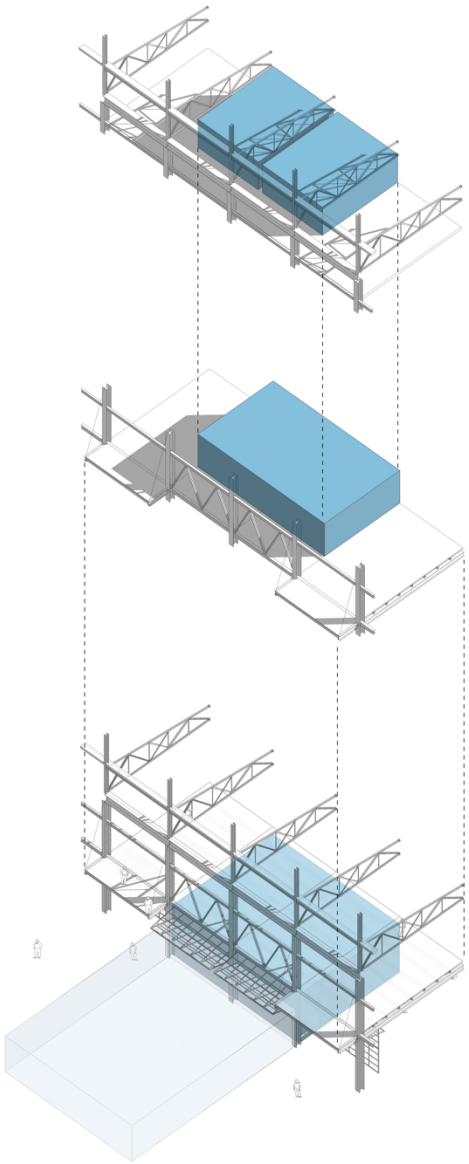

Figure 104, Workshops, Classrooms, and Meeting Rooms (Source: Author)

The mezzanine is lined with traditional classrooms, occupying two bay modules, and study areas, occupying single bay modules located between classrooms. One level above the classrooms are smaller, single-bay meeting rooms and classrooms.

The mezzanine level overlooks the multi-heighted central space, which is book-ended to the east and west with program that draws parallels between the building's historic and contemporary function. To the east is a small museum dedicated to the history of manufacturing at Clipper Mill and a main stair that leads down to the workspace areas. To the west is amphitheater-style seating with an integrated stair as a second mode of access to the mezzanine level which leads to exhibition space to display the creative works of the students. This relationship across the maker space creates a

dialogue between old and new, highlighting the role that making has played throughout the building's history.

Figure 105, Classrooms, Mezzanine Level of Tractor Building (Source: Author)

On the ground level the side aisle is infilled with large workshops dedicated to woodworking, robotics, plant science, art, digital media and film. The large open space is meant to be used as flexible space - malleable and practical - changing to fit the needs of the users. The workshops can open onto the main space by lifting their garage door-style enclosures, in order to interact with other students exploring different subjects in the interest of cross-collaboration.

On weekend the space can be used for markets and workshops where people can take lessons or purchase things made by local community members. They can hold public or private events in the large space - tied into a sense of community and

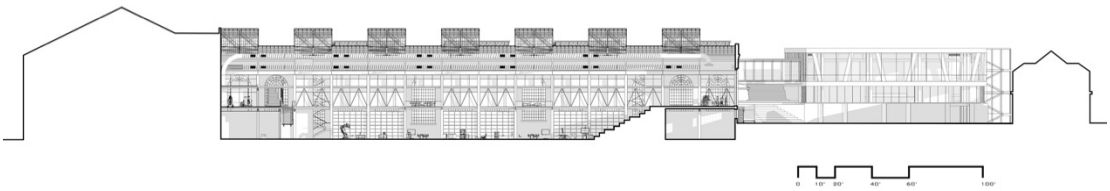

Figure 106, Tractor Building Section through Workspace (Source: Author)

growth in the area and tying it back to how this building previously played a significant role in the well-being of the locals. This place was once used for creating and it can return to that state with a renewed sense of urgency filled with the curiosity and energy of our youth. The world is a constantly evolving place that will challenge us with problems that we have not yet come to know.

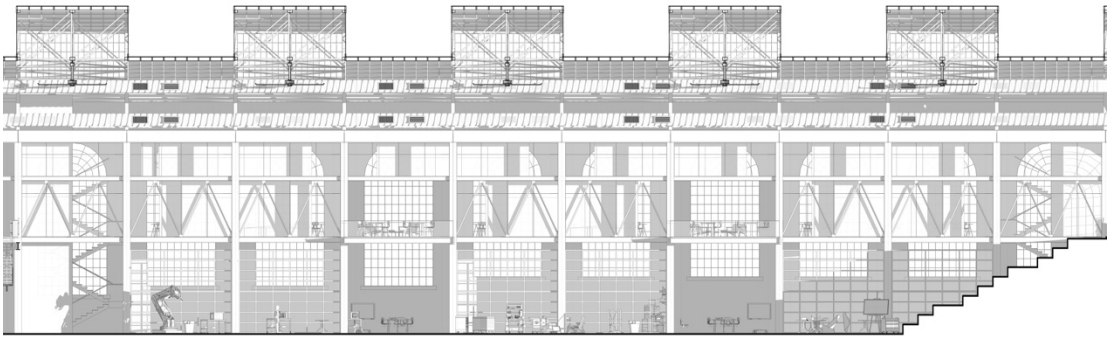

Figure 107, Workspace Section (Source: Author)

This thesis aims to preserve the history of the Tractor Building and enhance its sense of place by reviving the ritual of making. This revival comes in the form of active educational environments that emphasize learning through the act of making; a method of pedagogy that demonstrates the power of critical thinking and teaches students not *what* to think, but *how* to think in order to solve problems.

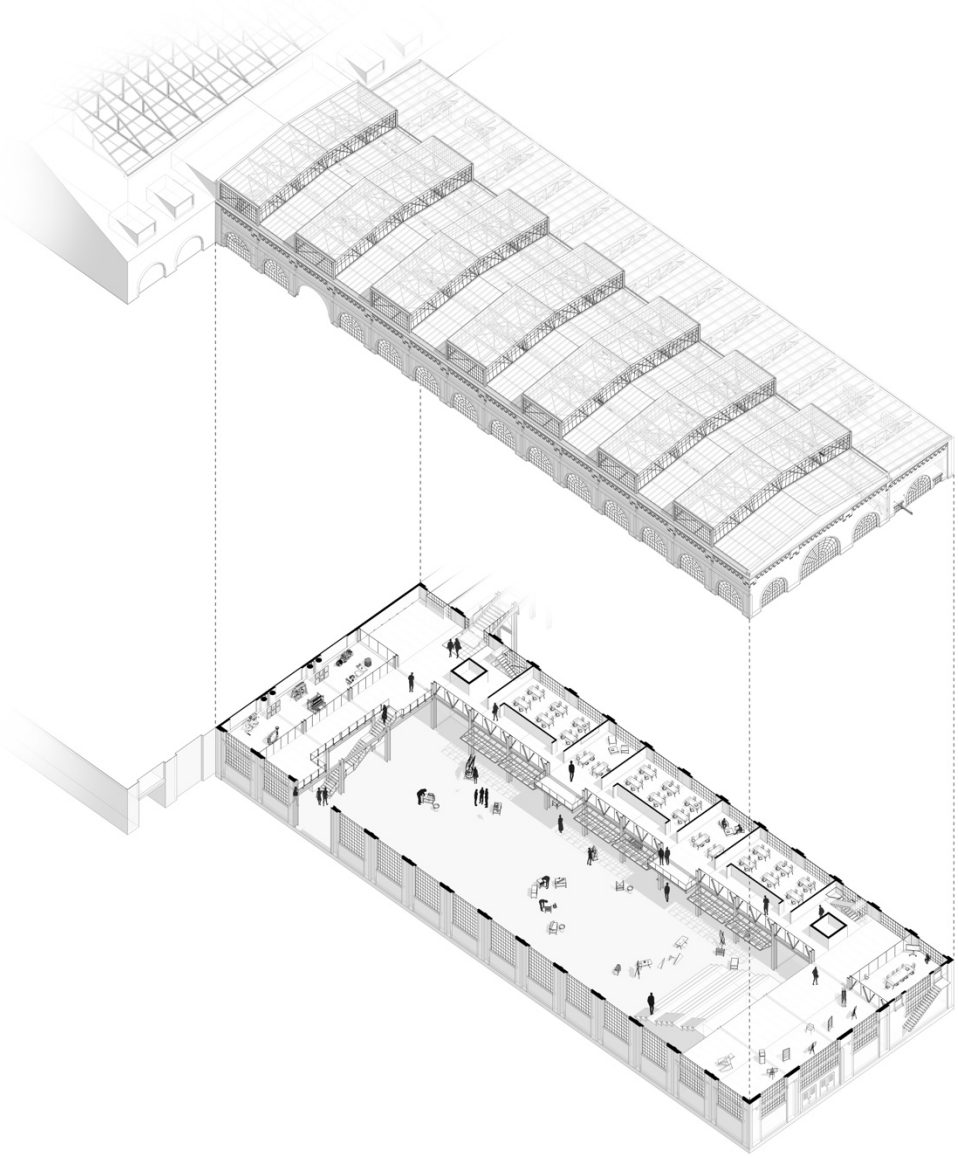

Figure 108, Workspace, Tractor Building (Source: Author)

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